



University  
October University for  
Modern Sciences and Arts  
Established by Dr. Nawal El Degwi in 1996



Faculty of  
Engineering

Graduation Projects Book  
2016/2017

# Contents

00

Introduction

01

Graduation Projects

Fall 2016 - Spring 2017

1- Industrial Systems Engineering (ISE)

2- Electrical Communication & Electronics  
Systems Engineering (ECE)

3- Architecture

02

Distinguished Graduation Projects

Class 2016-2017



# DEAN'S WELCOME



Professor  
Dr. Nahed Sobhi

Dean of the Faculty  
of Engineering

Dearest Graduating Students,

Welcome to the Faculty of Engineering at October University for Modern Sciences and Arts

Throughout its rich 20-years history, the Faculty of Engineering has established an outstanding regional and national reputation for excellence in Graduation Projects. This is due to its talented faculty and staff, its research initiatives, as well as its excellent curricula, its modern facilities and most important, the quality of its graduates. The Faculty of Engineering at October University for Modern Sciences and Arts is in an admirable position having been able to foster tremendously strong relationships with industry partners, alumni and government. The benefit of these strong relationships can be easily seen in the high quality of our graduation projects.

We believe in our students and we value their success. We are proud of our outstanding faculty and staff, whose cutting edge research is relevant to the needs of society. Our goal is to give students the opportunity to experience research and hands-on learning starting from the first day they step through our door. Through our program, undergraduate students gain practical experience working with industry, a win-win relationship for both partners and students.

Looking forward, the Faculty of Engineering will make every effort to continue to be known for its high-quality programs, innovation and relevance to industry and society.

1- Industrial Systems Engineering (ISE)  
Fall 2016 - Spring 2017



Student Name	Project Title	Supervisor & Company	Abstract	
	Mohamed Ayman Mohamed	Waste Elimination in the Egyptian Company for Metal and Wood Manufacturing	Dr. Nahed Sobhi & Dr. Sameh Salah	A new design of the carpentry layout facility decreased the transportation between manufacturing stations, eliminate backtracking, makes the product flow line moves smoothly and decreases the workers motion between stations.
	Ahmed Farag Ibrahim	Waste Elimination in the Egyptian Company for Metal and Wood Manufacturing	Egypt. Metal & Wood Manuf. Company	A new design of the carpentry layout facility decreased the transportation between manufacturing stations, eliminate backtracking, makes the product flow line moves smoothly and decreases the workers motion between stations.
	Habib Allah Gamaal Grada	Improvement of an Assembly Line in an Egyptian Manufacturing Company	Dr. Nahed Sobhi & Dr. Sameh Salah	The objective of this project is to develop and redesign of assembly line of the aluminum corners in order to increase the production rate and meet the customer requirements. The optimum solution which is executed is converting the manual assembly line to mechanized one by using conveyor system. After executing this project, the new production rate reached 11000 unit/day and the profit is 190000L.E/month.
	Albara Adel Khames	Improvement of an Assembly Line in an Egyptian Manufacturing Company	Egypt. Metal & Wood Manuf. Company	The objective of this project is to develop and redesign of assembly line of the aluminum corners in order to increase the production rate and meet the customer requirements. The optimum solution which is executed is converting the manual assembly line to mechanized one by using conveyor system. After executing this project, the new production rate reached 11000 unit/day and the profit is 190000L.E/month.
	Mohamed Dahag Negem	Improvement of an Assembly Line in an Egyptian Manufacturing Company	Egypt. Metal & Wood Manuf. Company	The objective of this project is to develop and redesign of assembly line of the aluminum corners in order to increase the production rate and meet the customer requirements. The optimum solution which is executed is converting the manual assembly line to mechanized one by using conveyor system. After executing this project, the new production rate reached 11000 unit/day and the profit is 190000L.E/month.
	Jasem Mohamed Alarear	Improvement of Warehousing and Storage in a Logistics Company.	Dr. Nahed Sobhi & Dr. Sameh Salah	The objective of this project is to improve the function of warehousing and storage in a cold Logistics Company. The study focuses on two main problems: The first one concerns the docks utilization, and the second one focuses on maximizing the usage of the storage areas.
	Shrouk Ibrahim Abdel-Fattah	Improvement of Warehousing and Storage in a Logistics Company.	Egyptian - Kwaitien. Logistic Company	The objective of this project is to improve the function of warehousing and storage in a cold Logistics Company. The study focuses on two main problems: The first one concerns the docks utilization, and the second one focuses on maximizing the usage of the storage areas.

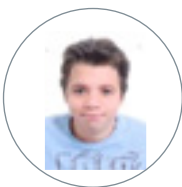

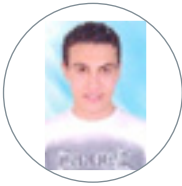
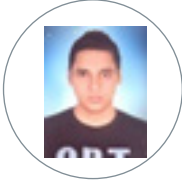
Student Name	Project Title	Supervisor & Company	Abstract
	Mohamed Samir Abu-Hamada	Implementa- tion of Sis Sigma Meth- odology in a Cooker Man- ufacturing Company.	The objective of this project is to reduce the defect rate in the cooker manufacturing production line in the Egyptian Universal Factories. In this project, data for some defective processes are collected in the production line. The problem is identified and appropriate data analysis using six sigma tools are made and proposed approaches are extracted to decrease the defects rate and improve the productivity.
	Omar Mohamed Al-Baioumy	Dr. Nahed Sobhi & Dr. Sameh Salah  Universal Factory	
	Mohamed Mokhlef Genedy	Production enhance- ment by using TPM in automotive industry	The objective of this project is to develop an effective model to improve the maintenance system in Industrial Control Factory; that make the factory deal with variances in demand and gives it the ability to enter new markets or export its products in situation of decreasing demand in Egyptian market. Total productive maintenance focuses on quality and maintenance of manufacturing systems of any organization.
	Mohamed Wag- ieh Mohamed	Dr. Nahed Sobhi & Dr. Sameh Salah  Nissan Auto- motive, Egypt	
	Maisara Saber Mohamed	Improve the productivity of Refrigerators man- ufacturing Company	The objective of this project is to improve the productivity of fridge manufacturing at GOLDI Company. Data was collected and time study was performed to calculate the standard time and determine bottleneck process. Bottleneck is a machine or process that limits the production rate of the whole line. OEE studied to categories major losses or reasons for poor performance and therefore provides the basis for setting improvement priorities and beginning of root cause analysis.
	Wisam Abdul Fattah Alhaddad	Dr. Nahed Sobhi & Dr. Sameh Salah  Bahgat Group, GOLDI	

Student Name	Project Title	Supervisor & Company	Abstract
	Mostafa Mounir Kamel	Dr. Nahed Sobhi & Dr. Sameh Salah El-Sweedy Factory	<p>The objective of this project is to manage and simplify all components information after representing them on a system that trace them and stop the detected component from spreading through the remaining products.</p> <p>The system is applied by drafting a flow chart for the components starting from the suppliers, moving along the processes, till it finalize to a product for the customer. The type of code used is QR code. And the required equipment for the traceability system are QR code printers, scanners, and components database.</p>
	Mahmoud Mohamed Moneir	Development of Traceability System in Electrometer Manufacturing Company	<p>The objective of this project is to improve facility productivity in metal rack factory, which was accomplished by the study of facility processes and factory layout. The study focuses on maximizing the total production and minimizing the facility downtime which will achieve factory target. Data was collected and analyzed. After the analysis of the collected data the discovered problems were facility layout, storage area, material handling equipment and using corrective maintenance plan.</p>
	Omar Ahmed Mostafa	Production Process Improvement in Metal Rack Factory	<p>The objective of this project is to improve facility productivity in metal rack factory, which was accomplished by the study of facility processes and factory layout. The study focuses on maximizing the total production and minimizing the facility downtime which will achieve factory target. Data was collected and analyzed. After the analysis of the collected data the discovered problems were facility layout, storage area, material handling equipment and using corrective maintenance plan.</p>



Student Name	Project Title	Supervisor & Company	Abstract
	Hebat-Allah Mostafa	Dr. Nahed Sobhi & Dr. Sameh Salah EDITA for food industry	<p>This project focuses on how a food industry company will be able to reduce changeover time by using Single Minute Exchange of Die (SMED methodology). The objectives of this research are to identify the factors that influence the high setup time and to highlight the actions that can be minimized to reduce the setup time. The productivity of the line will be evaluated by looking at the new Overall Equipment Effectiveness (OEE) indicator to prove the effectiveness of SMED. By implementing the improvement, it is expected to save for the factory 92812 EGP/hour, and increase the sales opportunities by 4455000 EGP/year.</p>
	Omar Mohamed El-Menshawey Improve Productivity by Using SMED Methodology and Waste Elimination in a Food Factory		
	Rayan F. S. Almasry	Dr. Nahed Sobhi & Dr. Sameh Salah EDITA for food industry	<p>The objective of this project is to decrease the SEC of the wafer line in Edita food industries. This reduction can be achieved by increasing the total line production. In this report, the lean methodology is used to achieve an increase in the production output, while using the same input resources such as raw material and energy. The seven main categories of waste (muda), and their effects on the energy consumed in production process are identified. A reduction in these wastes is directly proportional to the reduction in the SEC. A simulation model was developed using Arena software to help visualize changes that were implemented to improve the process.</p>
	Yustina Reda Lotfy Effects of the Lean Wastes on the Specific Energy Consumption (SEC)		

Student Name	Project Title	Supervisor & Company	Abstract
	Abdelrahman Aly Hassan	Efficiency Improvement of a Production Line in a Powder Coating Factory Dr. Nahed Sobhi & Dr. Sameh Salah Powder Coating Factory	<p>This project aims to evaluate the existing operations and processes at a powder coating factory as well as improve the efficiency of its operations, thus obtain maximum productivity and reach the minimum amount of losses. This study also focuses on the last station that contains an End Mill machine and Packaging machine, it is observed that with decreasing the amount of losses in this station the purpose is reached. The losses in this station consist of two primary elements, wearing of the single rotary valve and filling accuracy in the packaging part. By developing systematic procedures including a programmed model for the mentioned station, maximum benefits will be achieved.</p>
	Mohammed Saad Abbas		

	Student Name	Project Title	Supervisor & Company	Abstract
	Mohammed Hamdi			
	Mohamed Ali hemeda	Implementation of Reliability Centered Maintenance for Water Treatment & Utility Air Units at Petrochemical Company	Dr. Al-Awady Atalla	Organizations rely on Reliability Centered Maintenance (RCM) in order to develop a cost-effective maintenance program without affecting availability levels of facilities. The purpose of this graduation project is to develop and implement an RCM methodology. The proposed methodology is applied on a Hardness Removal Unit and Air Compressing Unit at an Egyptian Petrochemical Company. Our proposed RCM methodology can be summarized by the following steps:
	Ibrahim Mohamed Wahdan		Ethydco Petrochemical Company	
	Mohamed Ahmed Kamal			

**Abstract:**



1. Decompose the production unit into systems
2. Determine the criticality of each system by the Analytical Hierarchy Process (AHP)
3. Perform failure function analysis for critical systems' assets (FFA)
4. Perform failure mode & effect analysis for the critical assets (FMEA)
5. Assign maintenance strategy for each failure mode
6. Establish an effective maintenance program

In order to implement these steps, the required data of the Hardness Removal Unit and Air Compressing Unit was collected. For each unit the different operation systems were identified. Among these systems, the most critical one was recognized using AHP method after defining the evaluation criteria e.g. cost, production effect, safety and environmental effect. For the critical system(s), its different assets were identified and analysed. The function failure analysis (FFA) of critical system's assets were analysed using fault tree analysis. Subsequently, the Failure mode and effective analysis (FMEA) were developed and constructed. In order to prioritize the failures of the critical system, the PROMETHEE method is proposed to rank failures according to the predefined evaluation criteria. Three categories of failures were identified according to their criticality: the most critical, moderate critical, and uncritical. For the most critical failure modes, we proposed to assign the preventive maintenance strategy. For uncritical failures, we assigned corrective maintenance strategy. However, for moderate criticality failures, the maintenance strategy depends on the failure detectability i.e. for detectable failures we assigned predictive maintenance. On the other side for undetectable failures, we assigned preventive maintenance. Finally, the effective maintenance program for each failure mode "Maintenance Plan" was proposed.

Student Name	Project Title	Supervisor & Company	Abstract
	Abdel-Wahab Abdullah Soliman		<p>The major problem required to be solved is that the electrostatic powder coating process is underperforming which affects the productivity of the facility negatively and it has a high rate of powder waste. The proposed solutions are to redesign the spraying booth to serve the process being operated semi-automated or even fully automated, to improve the layout of the process elements, to improve the ventilation system that collects the powder and to drive a new method for loading the sprayed parts on the furnace cart.</p>
	Baher Ahmed Raafat	Improvement of Electrostatic Powder Coating Process Dr. Sameh Farid Al-Safwa Industry plant	
	Mohamed Abdel-Fattah Abdel-Aziz		
	Hesham Mohamed Ali		<p>In this project, an autonomous operation and motion humanoid robot (ATOM) is designed and implemented. ATOM's structure and body will be designed using Autodesk's Inventor, and then he will be moved to the simulation platform V-REP for testing and validation. ATOM will not be built using the conventional models ; Instead, it will be constructed using a model that utilize the theory of Under-Actuation. a set of selected motors and actuators around his body will be removed and replaced with free joints, passive gears, or simple motion mechanisms.</p>
	Khaled Waleed Mohamed	Autonomous Operation and Motion (ATOM) Humanoid robot Dr. Sameh Farid MSA	

Student Name	Project Title	Supervisor & Company	Abstract
	Mohamed Hamed Kassem		<p>3D printing is an additive manufacturing process of using sequential layers of printed material to create solid 3D objects of virtually any shape from a digital model. The most remarkable advances the process offers are the development and production of products with a perceptible saving in both time and cost, expedited by increased human interaction and optimization of the product development cycle, thus making it possible to create almost any shape that would otherwise be difficult to machine using conventional techniques. The project aims to design, implement, and control a 3-dimensional (3D) printer to overwhelm the disadvantages of delamination and low resolution.</p>
	Omar Ahmed Fathy	Design, Implement & Control of a 3D Printer for Industrial Processes Assistance  Dr. Sameh Farid  MSA	
	Omar Mohamed Farouk		<p>An Automated Guided Vehicle (AGV) is a cooperative driverless vehicle that improves the material handling system inside any manufacturing plant to an entirely new level. The main focus of this project is the conception, planning, and implementation of the system of an AGV. The timeline that is adopted throughout this research starts by the thinking process of how to create an AGV system and ends with the AGV being capable of doing its job perfectly inside the chosen plant. In order to successfully achieve this goal, the suitable type of AGV that would be capable of transferring the material used in production is chosen. Then the navigation method that would maximize the efficiency of the system while remaining in budget is selected. Also the communication method between the navigation method and the motors on board is selected.</p>
	Amr Mohamed Abo Al-ela	Design and Manufacture of an Automated Guided Vehicle (AGV)  Dr. Mohamed Sobih  Al-Safwa Industry plant	

Student Name	Project Title	Supervisor & Company	Abstract
	Mina Talaat Thabet	Design and Manufacturing a Plasma Cutting CNC Table	<p>Nowadays, the computer numerical control system (CNC) leads the machining sector to a whole new level, increasing efficiency, accuracy and decreasing the machining time.</p>
	Mahmoud Ahmed Abdalla	Dr. Mohamed Sobih MSA	<p>In this project; a plasma arc machine with a CNC table is designed and manufactured to enhance the performance of machining and cutting process.</p>
	Mostafa Khalaf Mohamed	Design and Manufacturing of an Electricity Generating Road Speed Bump	<p>When a vehicle moves over a Green Speed Bump, its kinetic and gravitational potential is converted into electricity by moving the bump vertically, the linear motion is converted into rotary motion using a crank shaft. The rotational speed obtained is then amplified by using a flywheel. This amplified speed is used to run a generator to produce electric power.</p> <p>The speed bump in a large shopping mall can potentially generate a great value of electricity per day, which in turn can supply electricity to many street lampposts and traffic lamp posts.</p>
	Mohamed Ali Saad	Dr. Mohamed Sobih MSA	
	Mahmoud el-tayeb sabri	Design and manufacturing a Vertical Axis Wind Turbine	<p>In this study, design and manufacturing a small scale vertical axis wind turbine is performed that can be used to power small appliances and lighting at homes and water pumping. In the project report, a literature survey of the wind turbines is presented. Some components of the system are selected and are purchased from the local market such as the generator, bearings, and shafts, while the reaming components are designed and manufactured inside the workshop. Some operational tests are conducted to evaluate the performance of the system.</p>
	Amir Mohamed thabet	Dr. Mohamed Hassaan MSA	

Student Name	Project Title	Supervisor & Company	Abstract
	Abdul Rahman Mohamed	Development of a Small Scale Steam Power Unit for Educational Purposes	<p>Development of a previously designed steam power unit is proposed to include the heat supply by using solar energy which is proposed to be a trough system instead of the natural gas which requires changing of the water boiler.</p> <p>The solar energy reflector is a parabolic curved trough which focuses the sun's energy onto a receiver, oil running pipe at its focus line. Because of the parabolic shape, troughs can focus the sun at 30-60 times its normal intensity on the receiver pipe. The concentrated solar energy heats the oil flowing through the pipe and then used to boil the water in the boiler which generates the steam which required to drives the turbine shaft that drives an electric generator. Different tests, are conducted to evaluate the performance of this power unit</p>
	Mohamed Youssef Majd	Dr. Mohamed Hassaan MSA	

2- Electrical Communication  
& Electronics Systems Engineering (ECE)  
and Computer Systems Engineering (CSE)  
Fall 2016 - Spring 2017


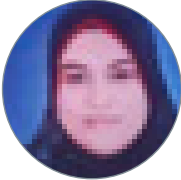

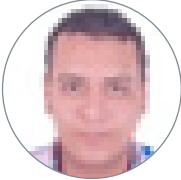


Student Name	Project Title	Supervisor & Company	Abstract
	Bander Talal Sajini	Dr. Ahmed Shaker	<p>Bandpass filters (BPF) are key devices in communication systems. For ultra-wide-band (UWB) applications, the BPF is required to have low insertion loss over the band 3.1 GHz to 10.6 GHz, and a flat group delay performance within that band. Moreover, it should exhibit a very good selectivity below 3.1GHz and above 10.6GHz in order to meet the FCC spectrum mask. DGS is now widely used to enhance the performance of the filter. DGS often used for size reduction. The various technologies of size reductions are used by the researchers such as photonic band gap structure (PBG), frequency selective surface (FSS) etc. Furthermore, DGS. The DGS technology is extensively applied to the design of microwave circuits such as filters, couplers, circulators, amplifiers, and power dividers.</p>
	Ali Mohamed Salem		
	Kinan Mohamed	Dr. Ahmed Shaker	<p>A meta-surface is composed of frequency selective surface (FSS) and the ground plane. The meta-surface that reflects the electromagnetic incident wave to an arbitrary direction can be constructed by using meta-surface technique. Therefore, the propagation environment is expected to be improved by the meta-surface. However, studies on the polarization property of the meta-surface are not enough yet. Circularly Polarized microstrip patch antennas are commonly used in current wireless communication systems such as satellite systems, radars, remote sensing systems, and global positioning systems (GPS) due to their numerous advantages like better mobility, lesser phase sensitivity for handheld and portable devices, low cost, and ease of fabrication. However, they usually suffer from narrow impedance and circularly polarized (3-dB axial ratio) bandwidths, usually 5% or less for 10-dB impedance bandwidth and less than 1% for 3-dB axial ratio bandwidth. Various methods like stacked microstrip patch radiators, and dual feeding networks with 90° phase difference are used for the circularly polarized (CP) bandwidth enhancement. Generally, CP slot/aperture antennas are used for broadband application but they have bidirectional radiation. In this project will be design meta surface antenna with CPW slot antenna for feeding.</p>
	Essam Mohamed		

Student Name	Project Title	Supervisor & Company	Abstract
	Islam Nader Awad	Fire Fighter Robot	<p>Nowadays, technology takes us a step forward as days' pass. Our objective of the project is to help mankind to fight fire easier than before, using the robotic technology to do so. The project is consisted of a robot that indicates automatically where is the fire, in addition to fighting it with the minimal intervention of human. We also added a fine touch to the project, which is sending an SMS message that contains the location of the fire using GSM alongside with GPS technologies. As we go through the report, we will cover all the white and black boxes of the project in specific details. Finally, the project is considered as a sample of what can be implemented by a certain company, if they inherited our project to implement it in real life.</p>
	Omar Hatem Hegazy		
	Alaa El Sayed	Planning and Modeling of Universal Mobile Tele-communication System (UMTS)	<p>For a given mobile communication system the design and planning methodology depend on several parameters. For example number of BTS [15] is a function of QoS [57], coverage and cost. Several software tools are available for mobile system planning, for example the most well-known packages are that developed by Motorola, Alcatel and Huawei. In this work planning of UMTS [70] system will be considered as our objective. UMTS [70] is a 3rd generation (3G) [3] cellular mobile communication system. The term 'third generation' is used because it represents the third step in the development of cellular mobile systems.</p>
	Khalid Tarek		


3G [3] technologies such as UMTS [70] (and CDMA2000 [17] in the US [71]) will extend the data capabilities of mobile devices even further, to encompass a much wider range of applications that depend upon high speed data transmission. Improved bandwidth and network efficiency drives revenue opportunities for operators and content providers. The objective of the project is to cover a certain area with laudable QoS [57]. Moreover, designing and programming software tools and develop software packages using MATLAB, Atoll and Google Earth. Atoll [11] is an open, scalable, and flexible multi-technology 64-bit network design and optimization platform that supports a wide range of implantation scenarios, from standard to enterprise wide server-based configurations using distributed and multi-threaded computing.

Student Name	Project Title	Supervisor & Company	Abstract
	Moustafa Tantawy	Dr. Fathy Zaky	<p>This project represents an effective technique for users to monitor and control the home appliances and many other equipment through a brain sensor. Nowadays people tend to rely more on automated machines to ease their lives. The aim of this study is to control home devices using a non invasive brain computer interface (BCI). The Electroencephalographic signals (EEG) recorded from the brain activity using the Mind wave headset are interfaced with the help of Arduino and HC-05 Bluetooth module. The user will control various devices in a smart home by using their attention and eye blink values. This application will be very useful especially for disabled people with special needs.</p>
	Amr Othman	Smart home for blind and disabled People	<p>Above issues are putting more pressure on mobile network operators, who are facing continuously increasing demand for higher data rates, network capacity, spectral and energy efficiency, and ubiquitous mobility required by new applications. On the other hand, 4G networks have reached the theoretical limits and therefore are not sufficient to accommodate the above challenges. Thus, a new generation of mobile communications, the fifth generation (5G) becomes indispensable. The ubiquitous goal of 5G is to achieve up to 100 times higher user data rates (1 to 10 Gb/s in dense urban areas), while supporting 100 times more connected devices. Millimeter-wave communication is a promising technology for future 5G cellular networks to provide very high data rate (multi-gigabits-per second) for mobile devices. Enabling D2D communications over directional mmWave networks is of critical importance to efficiently use the large bandwidth to increase network capacity. The key of any wireless communication system is antenna. So, the antenna design that support 5G is our main challenge in this project.</p>
	Abdel Rahman Ahmed El Badawy	Dr. Fathy Zaky	<p>Smart home for blind and disabled People</p>
	Youssef Mansour	Design of Millimeter Wave Antenna for 5G	<p>Above issues are putting more pressure on mobile network operators, who are facing continuously increasing demand for higher data rates, network capacity, spectral and energy efficiency, and ubiquitous mobility required by new applications. On the other hand, 4G networks have reached the theoretical limits and therefore are not sufficient to accommodate the above challenges. Thus, a new generation of mobile communications, the fifth generation (5G) becomes indispensable. The ubiquitous goal of 5G is to achieve up to 100 times higher user data rates (1 to 10 Gb/s in dense urban areas), while supporting 100 times more connected devices. Millimeter-wave communication is a promising technology for future 5G cellular networks to provide very high data rate (multi-gigabits-per second) for mobile devices. Enabling D2D communications over directional mmWave networks is of critical importance to efficiently use the large bandwidth to increase network capacity. The key of any wireless communication system is antenna. So, the antenna design that support 5G is our main challenge in this project.</p>

Student Name	Project Title	Supervisor & Company	Abstract
	Mostafa Mohamed Nabil		<p>Branch line couplers are passive components widely used in microwave circuits such as balanced amplifiers, balanced mixers, power divider, phase shifters etc. The conventional branch line coupler employs four quarter-wavelength transmission line. Generally good performance and 90° phase shift between the coupled port and through port is obtained in the narrow bandwidth within the vicinity of center frequency. The conventional branch line coupler is small for higher frequency range and large for lower frequency range as the size depends on wavelength and wavelength is inversely proportional to the operating frequency. Recently miniaturized and broadband couplers are needed to achieve circuit miniaturization in the practical application so efforts are made to reduce size and increase the bandwidth. For size reduction different structures are employed in replace of the conventional transmission line, such as defected microstrip structure (DMS), defected ground structure (DGS) artificial transmission lines (ATL), open stub, complementary split ring resonator (CSRR).</p>
	Yara Mahmoud	Compact design of 2.4 GHz Quadrature coupler for balanced power amplifiers	Dr. Mohamed Ismail
	Farouk Hesham	Vehicle tracking and driver behavior using GPS/GSM	Dr. Mahmoud Hanafy
	Moataz Omar		<p>This project helps in creating a system that detects the location of vehicle as well as securing it. It also minimizes the accruing of an accident by sensing the driver's behavior and status via different sensors. This process starts by the sensors that detect whether the driver statues in different sensing ways for security and safety of both the driver and passengers during the trip as well as in accidents location detecting and alerting then it sends the data to the microcontroller with embedded software that is attached to the vehicle, then it collects all the data and sends it to the server and mobile phones via GPS\GSM modules.</p>

Student Name	Project Title	Supervisor & Company	Abstract
	Amir Mohamed Abdou		<p>Automated room control can be defined as a system controlling the room facilities like lighting and conditioning which is implemented to secure the operations, facilitate it and decrease its energy consumption. Automated room control depends on sensors' arrays to insure the correct readings and guarantee accurate decisions. Different types of sensors may be implemented according to the system operation to cover all the needs in the control process. This project targets a design for an automated room control implementing multiple sensors' arrays in different areas to introduce such application and evaluate it using a real model for the system.</p>
	Ahmed Saed Abo Bakr	Control of Multiple Sensor arrays in different area using SCADA	Dr. Mahmoud Hanafy

The project will be simulating an advanced BMS with better performance and capabilities such as security and safety applications while using less expensive and complex components. Our system will be based on implementing a PLC as the system controller and will be implementing SCADA system to provide remote supervision and control for the system from a control center. A real model for an automated room control system will be developed for introduction and evaluation during Grad 2. During Grad 1, a literature review for the main implemented technologies and components is done. Also a detailed design for our proposed system is developed to discuss the system theoretically

Student Name	Project Title	Supervisor & Company	Abstract
	Lyad Sami Mohamed Abu Zarifa	Dr. Said Mabrouk	<p>This project aims to develop an automatic traffic monitoring , management and control system by using one of the most promising technologies called RFID which means “Radio Frequency Identification and detection “ , it simply uses the radio-frequency waves to track moving objects and identify them with efficiency and ease. RFID has proved its efficiency and feasibility in many fields form typical transportation system or civilian facilities such as universities and industrial establishments to the security domain where the need of tracking and controlling the traffic of people and objects is a necessity specially with the advancement in manufacturing technology the use of this technology is becoming easier and more efficient. The project is made of RFID tags that which will be embedded into a number of cars on the other end Stationary RFID reader which will scan the surrounding area , once the car “ tagged object “ enters the range of the RFID reader module , it will record this event. In case of unauthorized car is detected, the RFID reader will prompt the microcontroller to trigger a GSM module and send a warning SMS to administrator. Using multiple stations of this system, scattered around different points and highways, theoretically, we can determine the speed of the cars by recording their logging time, and the base stations locations from each other, in addition to a tracing of cars route can be mapped using these same data. The overall system must have many stationary RFID stations to be in various places and all of them to be connected to a server that manages automatically the upcoming data. In this project my task is to design and implement a proof of concept design of the basic and most important unit in this big system.</p>

Automatic  
 Traffic  
 Control  
 using RFID  
 system

Student Name

Project Title

Supervisor & Company

Abstract



Israa Mohi El Din

Implementation of distance measurement device using laser

Dr Ehab El Sehely

This project describes the implementation of distance measurement device by using laser. The main goal is to design and implement a laser device to measure a distance separated between it and a far object. There are two main optical methods in measuring distance, the first method is TOF method that is called Time of Flight, in this method a laser beam is transmitted towards the distant object, then the reflected beam is received and time of flight is measured from instance of transmitting laser beam to the object until the instance of receiving the reflected beam from it. the second method called trigonometric method that we use in this project, this method depends on making a geometrical equation between distance that we want to measure and image dimensions of object, then making image analysis, and by solving these equations, the distance is determined. So we built the device from a laser source as a transmitter, an optical camera optical to capture the image of target and processing unit (raspberry pi3) to make image processing on target image for solving trigonometric equation to obtain target distance. We make an image analysis to detect the position coordinates of the reflected laser spot image. So we use a digital optical camera capable of capturing images in RGB format. Finally, the output is displayed as a digital number on LCD.

Student Name	Project Title	Supervisor & Company	Abstract
	Adel Mohamed Elsayed Mohamed Elhakem	Visible Light Commu- nication II  Dr.Waleed El Nahal	<p>Have you ever been to a museum then you start staring at some painting then asked yourself "Who painted this amazing thing ?!" or "What is this magnificent thing?" and you didn't find the answer or even someone to ask?</p> <p>The Museum ID using the VLC will be the future in tourism industry. It's a promising technology for next generation of communication for short range, high speed wireless data transmission. In this System, LEDs blink at a high rate as the human eye can't notice the change in light intensity, but photodiodes will be used to detect the (ON-OFF) and the microcontroller starts to decode the received pulses.</p>
	Nessma Ayman Has- san Fahmy Ahmed Elkomy	Visible Light Commu- nication I  Dr.Waleed El Nahal	<p>While the radio spectrum is limited, the demand for wireless data transmission keeps increasing. There is a pressing need for new kinds of wireless communication systems. Recently, visible light communication (VLC) has been proposed as an alternative means of wireless communication. The idea is to modulate LEDs transmitting electromagnetic waves in the visible light frequencies to communicate between devices within the same room.</p> <p>There are various issues and problems with current wireless communication systems that are going to be analyzed in this project. This project discusses how these issues could be resolved by the visible light communication. After that, the implementation processes of the visible light communication system are described in detail, including a value analysis of the parts, components and the building blocks used to build the prototype.</p> <p>The main functions and algorithms of the proposed system will be achieved based on ON-OFF Keying, while the system will be implemented, based on Microcontrollers.</p> <p>It is shown that by applying the proposed technique, the speed that can be achieved is 2 Mbps with a distance of 30 cm. However, these outputs maybe change after the hardware implementation (increase or decrease).</p>





Ahmed Jamal  
Amin Saleh  
Alqeema

Surveillance  
System  
Using Face  
Recognition  
Technique


Dr.Waleed  
El Nahal



Through the last three decades Biometrics have received substantial devotion and a significant implementation in numerous applications such as border control/airports, health care, justice/law enforcement and Logical access control, Despite of the fact that there are various surveillance and security systems consuming great amount of power are existent in market these days, criminal and robbery rate have gone very high.

The proposed project targets the ability of enhancement and improvement of biometric surveillance systems to reach higher levels of security based on verification. The proposed system captures biometric information or in simpler words the biological/physical traits of the subjected personals, aiming to collect the maximum sum of data attainment which is ordinary and may be nonsense to the user. Accordingly, the decision of a biometric system was available to associate two different techniques of biometric measurements to achieve high precision and consistency.

The proposed project is aiming to prevent theft in highly secured areas with greater precision and inferior cost. The proposed system has face detection and recognition technology which donates access to solely authorized personals to enter that area. At the incidence of unauthorized access by any means the system then alerts the security personals, sending them the exact location of the breach, in addition to the intruder face picture.

This project plans two main sub systems namely face recognition and face detection. By which a webcam captures an image and then the system compares it with the previously saved database. If the sample is an unauthenticated one and there was a security breach the security personals will be alerted.



Student Name	Project Title	Supervisor & Company	Abstract
	Mohammed Hosny Saleh Hussein Hatem	Portable 3-axis polar-coordinates CNC  Dr.Waleed El Nahal	<p>In any hardware Manufacturing CNC machines is a very important tool, it's commonly used in mass production and prototyping of PCBs, hardware body, accessories, artworks, etc....</p> <p>Although, most of 3-axis CNC machines are very expensive, massive power consumer &amp; huge in size to be used by individuals. In the proposed project, polar coordinates algorithm is used rather than Cartesian coordinates that will allow me to change the mechanical design of the ordinary 3-axis CNC machine and throw out one and a half axis and use rotary table instead, of course this will affect hugely the power consumption and the cost to manufacture the machine also this will make it portable.</p> <p>The main functions and algorithms of the proposed system are achieved based on polar coordinates. The technology used to achieve so is using Controller Board and custom made software to control the machine.</p> <p>It is shown that by applying the proposed technique the size of the CNC machine will be reduced to be portable, the power consumption &amp; the cost this will make it affordable by individuals like students, developers, small business startups, etc.....</p>

Student Name	Project Title	Supervisor & Company	Abstract	
	Ali Mohamed Elsaeed Sayed Ahmed		<p>In this project, an intelligent humanoid robot with a lower cost is introduced as the human body is well suited for acting in our everyday environments. Stairs, door handles, tools, and so on are designed to be used by humans. Applying the proposed system our robot will be able to learn how to balance, walk and grab things.</p>	
	Yousef Yousef Ahmed Yousef Elazhary	Autonomous Operation and Motion Hu- manoid Robot (ATOM) (part I)	Dr.Samer Ibrahim	<p>This part of the project has the target of designing and implementing the electrical and embedded system of that intelligent humanoid robot by constructing the needed sensory system with a suitable processing unit , on the other hand this part will contribute in building the lower body learning algorithm (DQN) that make the robot able to learn how to balance while walking. The lower body learning algorithm consists of two integrated blocks (Q-Learning &amp; Neural Network) , so we in part 1 are focusing in the Q-learning algorithm while part 2 has the target to construct the neural network algorithm and integrate it with us beside constructing the convolution neural network algorithm for the upper body learning to make the robot able to detect the target object and also detect faces</p>

Student Name	Project Title	Supervisor & Company	Abstract	
	Amr Abdel Naby Ahmed	Autonomous Operation and Motion Hu- manoid Robot (ATOM) (part 2)	Dr.Samer Ibrahim	<p>The notable growth in robotics science research and developments is simply a result for humans trying to catch up with the ever-changing busy life. Although the development rate is huge, majority of designed robots are direct programmed, limiting them to only do few programmed dedicated tasks with high cost.</p> <p>As the human body is fit to act well in a day-to-day environment like stairs, door handles, and tools which are already designed to be used by humans, an intelligent humanoid robot with a lower cost is proposed. By applying our system methods, the robot will be able to learn how to balance, detect its the goal and walk towards it.</p> <p>This part of the project has the aim to build the neural network that will serve as the concrete in making the lower body of the robot able to learn how to balance while walking This neural network will be integrated with Q-learning algorithm that part 1 will construct to complete the lower body learning algorithm which is Deep Q-Networks (DQN). Also, this part (part 2) has the target to build the upper body learning algorithm using Convolution Neural Network (CNN) that will take inputs from the camera to detect the goals in order to move towards them from one place to another.</p>

the proposed system is different from the applied ones in many aspects like: a) the under actuation concept that results in lower cost and power consumption. b) Using Deep Q-Learning algorithm which has not been used in humanoid robots except for one approach named Atlas which was model based while our system is model free.

The main functions and algorithms of the proposed system will be achieved based on reinforcement learning (Deep Q-Networks) and convolution neural network which proved to be a working method in previous applied systems such as Atlas & Atari, while part 1 of the project will implement the sensory system based on Linux micro-computers (Raspberry Pi). By applying the proposed technique which is Deep Q-Networks, our humanoid robot will learn how to balance and walk by giving -ve rewards for the bad actions in order not to repeat doing them again and find the best possible actions making the robot able to humanly walk.


Student Name	Project Title	Supervisor & Company	Abstract
	Fady Dawoud Khader		<p>Electricity meters are growing steadily and expected to reach 40M meter. These meters do not support two-way communication between the end users and the electric utility agency, same issue faces the water and gas meters. Also, a huge number of electricity collectors (man-power) and thus increasing the salary budget that is specified for those collectors. Moreover, the current meters can't handle the theft of electricity from the end-user side.</p>
	Seif Atef Abu Jaber	Smart Meter for Utilities Dr.Maher El-Tayeb	<p>A good solution is to combine the three utility meters in one integrated system to decrease the effort that is done to collect the data and the money from the end users, but an integrated meter doesn't exist. In this project, all three meters are going to be combined in one intelligent integrated system that is capable of sending data in a real-time manner of about 1-minute frequency to a server that analyses the data and send each piece to its right agency whether it was electricity, gas or water. Also, the water and gas leakage mechanism will be implemented using data analysis from the server side which was not implemented in previous systems and by the same algorithm. The main and algorithm of the proposed system is based on analog and digital data processing and the system will be implementing in C language. Also, microcontrollers, PCB, surface mount component will be used to ensure that the meter will sustain a small size and a reduced cost. By applying this proposed system three readings are shown on an LCD for user and in server for the agencies. Moreover, the cost is reduced by sending data in Ethernet and this data stored in cloud without using huge man-power capabilities.</p>



Student Name	Project Title	Supervisor & Company	Abstract
	Osama Samir Abouzaid Ahmed	Reconfigurable antenna based on MEMS technology thermal actuator  Dr. Maher El-Tayeb	<p>Throughout the history Electrical engineering, scaling down things always results in greater efficiencies, so we have seen examples like scaling down MOS transistors which has enhanced its performance and resulted in integrability. Same goes for mechanical systems, when made smaller works at much better efficiencies, and more than that the capability of integration with electronic components resulting on a single product on chip, that is all referred to as a Micro electro-mechanical system, MEMS. MEMS gave rise to wide spectrum of devices and products, especially sensors and actuators, where we can benefit from the scaling. In this project we are introducing a new MEMS actuator that is thermal actuator made of poly silicon, single material but different widths that result in some sort of motion when current passes through, the project can benefit from this small scale motion. The project also includes the process design and steps of fabrication and micromachining of this device from silicon wafer. At the end we integrate this Micro switch with a reconfigurable antenna as a demonstration for the new powerful MEMS switch to see the effect of scaling</p>
	Haitham Gamaleldin Abdelftah Hasan Taalab		
	Mohab Omar Abdelhai Saleh Elbeyali	Printed antenna for automotive application  Dr. Mohamed Ismael	<p>Nowadays in car design more and more plastic parts are used. Plastic doesn't shield the signals. Thus, the idea is to integrate antennas hidden in the inner side of those plastic parts without causing damage to surface of the car. But in order to receive broadcast signals appropriate antennas are needed. Taking in mind that modern communication by radiation broadens the range of frequencies that should be received or sent out. The normal monopole whip antenna is simple but not sufficient for the new wide range of frequencies. So, this project desire is to obtain a printed antenna in plastic body parts of automotive. This antenna is designed to receive FM radio signal, Bluetooth signal and GPS signal.</p>
	Ahmed Amr Shafik Shaaban Hassan		



Student Name	Project Title	Supervisor & Company	Abstract	
	<p>Moustafa Mahmoud Abdelhares Mohamed</p>	<p>Wireless Energy Harvesting</p>	<p>Dr. Mohamed Ismael</p>	<p>RF energy is currently broadcasted from billions of radio transmitters around the world, including mobile telephones, handheld radios, mobile base stations, and television/ radio broadcast stations. The ability to harvest RF energy, from ambient or dedicated sources, enables wireless charging of low-power devices and has resulting benefits to product design, usability, and reliability. System will collect ambient energy of radio frequencies and amplify the gain to produce a suitable output</p> <p>Main objectives:</p> <ol style="list-style-type: none"> <li>1-Design an antenna to collect RF signals.</li> <li>2- Transform received RF power into dc current.</li> <li>3- Improve the gain and received power.</li> </ol> <p>What differentiates the proposed system from the current systems is that the whole system is compact and can fit into small devices for the purpose of adding a self-recharge ability for low power devices. Testing is done theoretically using CST and ADS simulations for both the micro-strip antenna and the rectifier circuit respectively and practically using Vector Network Analyzer (VNA).</p>
	<p>Ahmed Sameh Abdelaleem Mahmoud</p>			

Student Name	Project Title	Supervisor & Company	Abstract
	Hamzah Khater Ibrahim Mo- hamed Khater		<p>This system is aimed to make vehicle driving safer than before. This is implemented using Microcontroller. We have derived the driver's condition in real time environment and we proposed the detection of alcohol using alcohol detector connected to AVR such that when the level of alcohol crosses a permissible limit, the vehicle ignition system will turn off and the GPS module will capture the present location of the vehicle. In addition, the GSM module will automatically send distress message to police or family members. The main objectives are to develop an embedded system which detects the alcohol reducing the road accidents in the near future due to drunken driving, save the life of the people and, the system reduces the quantum of road accidents and fatalities due to drunk driving in future. We have many difference between the proposed system and the most commonly applied one: our system has GPS and GSM alarm included, Security add to the system by the login state, Alarm with light indicator was added, there will be a SOS Key for helping driver and velocity control limitation.</p>
	Ahmed Ayman Kamel Abdallah	Alcohol Sensing Alert with Engine Locking	Dr.Eman Seraj



Student Name	Project Title	Supervisor & Company	Abstract
	<p>Mostafa Khaled Mohamed Ma- her Mohamed</p>	<p>Dr.Eman Seraj</p>	<p>Although we are living in an era of fast development in the technology of monitoring and controlling in the field of storage houses, Egypt still suffers from a huge scandals in this field especially in field of wheat that considered to be the main source of nourishment in Egypt that the poor people who represents the majority, depends on. From this point the proposed system suggested a new technique that never implemented before in Egypt to face the problems of huge costs that reaches up to billions of pounds, also the illegal addition of false quantities of wheat and the uncontrollable of the environment inside storage houses. The new technique depends on measuring the level of grains inside silos through an efficient level sensors and monitoring the environment through environmental sensors, all these parameters will be sent periodically to the main station via GSM module, and will be displayed automatically on the LCD. Through this device we tried to decrease the human interface and decrease any manipulation and fraud that is available in the current alternative systems.</p>
	<p>Peter Emad Ayad Sadek Riyad</p>	<p>Smart Monitoring of Solider Health and Position</p>	

Student Name	Project Title	Supervisor & Company	Abstract
	Noha Hasan Ali Mohamed Elsayed Sakr		<p>Security, particularly robbery security of vehicle in basic parking places has turned into a matter of concern. An effective car security framework is executed against burglary using an embedded system integrated with Global Positioning System (GPS) and GSM. The applied system is an endeavor to design and develop CATS that uses GPS and GSM system to prevent burglary and determine the exact location of vehicle. The system contains GPS module, GSM modem, vibrator sensor, Atmega328-UP microcontroller, relay switch and car alarm. GPS system track the esent area of vehicle, there are two sorts of following utilized one is on the web following and other is disconnected following tracking used one is online tracking and other is offline tracking. GSM system is also installed in the vehicle for sending the information to the owner of the vehicle because GPS system can only receive the vehicle location information from satellites. The preventive measures like engine ignition cutoff, fuel supply cutoff and alarm which is controlled uaing user or owner mobile.</p>
	Abdelrahman H.H. Jebri	Car Anti-Theft System (CATS) Dr.Eman Seraj	



Student Name	Project Title	Supervisor & Company	Abstract
	Ibrahim Nabil Al-sherbini Ibrahim	Dr.Eman Seraj	<p>Wireless communication has a big in every day of our lives. It involves many applications specially the radio broadcasting and cellular communications. In every working space co-workers and employees needs to be connected together through wireless or wired channels of communication to be able to send or receive data or solve a problem without being in the same place to save time and to have fast solutions, so the wireless local area network was introduced using Wi-Fi technology. Using Wi-Fi or Cellular networks has a problem which is the centralized control in case of wi-fi the access point and in case of cellular networks the base station.</p>
	Mohamed Ibrahim Mohamed Abdalfatah	Design and simulation of Mobile Adhoc Network (MANET) with enhanced security services	


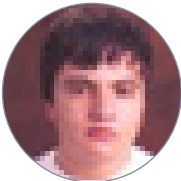
It governs the transmission of data between nodes inside network, but if anything happens to this centralized control, the network will go down and there is no communication between nodes. Because of this issue the adhoc communication was proposed. It's a type of communication that has no centralized control the nodes communicate together using hop to hop communication data is sent from the sender node to the receiver and the data is sent through a path formed from other nodes, in another word nodes inside the network act as a bridge to path data on it. Despite the pros of this type of communication, it's like anything it has cons, the cons, one of them is the security. Since this network has no centralized control nodes can enter and exit network easily and this allows malicious nodes to join the network and practice malicious behavior. The aim is paper to apply security algorithms on the network and see the behavior of the network through analyzing the graphs, the OPNET modeler will be used to execute those tests.

Student Name	Project Title	Supervisor & Company	Abstract
	Ahmed Tamer Farouk Mohamed Aly		<p>This report has been prepared to discuss radio direction finding (RDF) techniques, methods of implementation, and the design and execution of a prototype RDF system. The radio direction finder is a device for finding the direction, or bearing, to a radio source. The purpose of using an RDF is to be able to detect and locate the source of an enemy or unknown signal can be determined through two or more receivers. Included in the report are several details about different techniques, including time difference of arrival, Doppler, and angle of arrival. The technique that was most efficient was based on angle of arrival. As this technique relied greatly on directive antennas, research on different kinds of antennas was also included in this report. Ferrite rod antennas were found to be the most suited for the purposes of successful implementation. The programs Matlab and Arduino were concurrently used in the implementation process. Our target is to implement a system based on angle of arrival to determine the location of a transmitter at a given angle.</p>
	Abdelrahman Ashraf Abdelfattah Mohamed Elhamouly	Radio Direction Finder Dr.Eman Seraj	

The system will be able to detect a signal at a given frequency using two receivers, calculate the distance between each receiver and the transmitter, determine the location of the transmitter and display it on a grid map made by GUI of Matlab. Upon successful completion of this project, more knowledge has been gained about the direction finder techniques for wireless communication systems, investigate the mobility effects on the detection in wireless mobile communication systems, understand the concepts of wireless tracking and its different methodologies, design the basic block scheme and make the required simulation to check the designed schemes and its expected performance and implement and test the designed system using: discrete components, small vehicles or transmitters in order to measure the RDF performance in different test areas and thus try to change the operating environment as obstacles/reflectors.

Student Name	Project Title	Supervisor & Company	Abstract
	Hossameldin Hesham Mohamed Eltoukhy	Dr.Ahmed Shaker	<p>Radiation surface wave (surface current) on ground plane has a destructive effect on the characteristics of antennas which benefits from a common ground plane, especially Cavity Backed Slot (CBS) antennas. Surface current increases mutual coupling in an antenna array. This in turn causes unwanted characteristics in array applications. The main goal of this work is to design a new modified antenna array achieving less mutual coupling by reshaping ground plane and using tuned Elongated Mushroom Electromagnetic Band Gap (EM-EBG). Moreover, in this study, we focus on the influence of changing depth of EM-EBG holes. In this regard, four different designs for CBS antenna arrays are investigated.</p>
	Abdelrahman Shaban Bakry Abdelhalim	Dr.Ahmed Shaker	<p>This research discusses a reflectarray antenna which is good for long distance communications because its unidirectional beam, and ability to reduce radiation in unwanted directions. In such system the array operates in three bands X(8GHz-12GHz, Ku(12GHz-18GHz), and K(18GHz-27GHz). Its design consists of 81 unit cells, each unit cell consists of a circular ring, a circular patch with slots on it. The unit cell is 11mm. The elements dimensions have been optimized to get bands as wide as possible. The whole array is 99mm X 99mm. The simulation shows high gain in the three bands. The design and simulation are employed in CST.</p>
	Mohamed Mahmoud Mohamed Heikal	Dr.Ahmed Shaker	<p>Mutual coupling reduction in cavity backed slot antenna</p>
	Ali Abdallah El Faisal	Dr.Ahmed Shaker	<p>A single-layer multi-band reflectarray antenna in X/Ku/K bands</p>



Student Name	Project Title	Supervisor & Company	Abstract
	Ayman Mohamed Zakaria Badawy		<p>In recent years, due to the attractive features, such as low cost, small size, ease of fabrication, and wide frequency bandwidth, there has been more attention in ultra wide-band (UWB) monopole antennas. The Federal Communication Commission (FCC) has allocated 3.1-10.6 GHz for commercial ultra-wide-band (UWB) communication systems. Several antenna structures have been proposed for UWB applications. The frequency range for UWB system will cause interference to some other existing narrowband services. One of them is wireless local-area network (WLAN), which operates in the 5.15-5.875 GHz band. However, using filters the complexity of the UWB system will increase. To overcome this problem, the structures with band-rejection characteristic such as parasitic Inverted-U strip, U-shaped slot, arc-shaped slot, H-shaped conductor backed plane, and rectangle-shaped plane are proposed to integrate with the previous antennas. However, none of them had reconfigurable band notch characteristics. The main challenge for researchers in UWB antenna design is the design of a single antenna that can provide reconfigurable rejected band.</p>
	Ahmed Osama Mohamed Hafez	Uwb monopole antenna with switchable band	Dr.Ahmed Shaker


Student Name	Project Title	Supervisor & Company	Abstract	
	Mohannad Nasir Rashed Alrawahneh	Tapered Slot Vivaldi Antenna with Improved Radiation Charac- teristics	Dr.Ahmed Shaker	<p>As a result of increasing international terrorist threats, the need for an efficient inspecting tool has become urgent. Not only for seeing through wall applications, but also to be employed as a safe human body scanner at public places such as airports and borders. The usage of microwave and millimeter wave antennas and systems for detection / imaging applications is currently of increasing research interest targeting the enhancement of different security systems. There are many challenges facing researchers in order to develop such systems. One of the challenges is the proper design of a low cost, reduced size and efficient antenna probe to work as a scanning sensor.</p>
	Amir Ghazi Mo- hammad Alseid			

Student Name	Project Title	Supervisor & Company	Abstract
	Mohamed Esmadel Mohamed	Dr.Ahmed Shaker	<p>Fractal antenna engineering is a swiftly evolving field that aims at developing a new class of antennas that are multiband, wideband and/or compact in size. A fractal is a self-repetitive geometry which is generated using an iterative process and whose parts have the same shape as the whole geometry but at different scales. Accordingly, fractal-based radiators are expected to operate similarly at multiple wavelengths and keep similar radiation parameters over several bands. Another property of fractal geometries, which makes them attractive candidates for use in the design of fractal antennas, is their space-filling property. The Hilbert fractal shape is one of the popular shapes in this side. The feature of it can be exploited to miniaturize classical antenna elements, such as dipoles and loops, and overcome some of the limitations of small antennas.</p>
	Mahmoud Ehab Mongy	A Compact Design of Planar Array Antenna with Fractal Elements for Future Generation Applications	

The line that is used to represent the fractal geometry can meander in such a way that effectively fills the available space, leading to curves that are electrically long but compacted in a small physical space. Fractal geometries have also been used to design antenna arrays. Fractal arrays have shown to possess desirable attributes, including multiband performance, low side-lobe levels and the ability to develop rapid beamforming algorithms based on the recursive nature of fractals. Fractal elements and arrays have been also recognized as perfect candidates for use in reconfigurable systems.



Student Name	Project Title	Supervisor & Company	Abstract
	Eriny El Kess Antonus	Design and Development of EUS1 Antennas	<p>Design the antenna for first satellite for Egypt universities (EUS1); the first Egyptian experimental satellite operates for remote sensing done by universities in Egypt. The satellite has an image resolution of 8 meters which is satisfactory for many important civilian applications. The satellite can capture a vertical image for any location in Egypt once over 75 days. It also can be tilted to capture images for location at both sides of satellite path, within periods less than 16 days capture 3D images for location. The satellite payload includes an infrared camera and four spectrum optical cameras that used for various applications, also has a communication device for the store and forward transmissions and an Antenna as part of transmitting and receiving system that is designed to radiate or to receive electromagnetic wave. Designing antenna to meet the requirements of the satellite is the primary challenge. The assigned elements for the antenna are to be reasonable sized, light weight, robust, cheap, and reliable and having all the desired electromagnetic properties. Using CST and FEKO software to simulate and design an antenna to produce the desired requirements and to verify the simulation results, the antenna will get measured in an anechoic chamber.</p>
	Mohamed Mahmoud Jamal El Din	Dr.Ahmed Shaker	

Student Name	Project Title	Supervisor & Company	Abstract
	Ahmed Ihab Galaleldin Darwish	Dr.Ashraf Ali	<p>Compressive Sensing (CS) is considered the key for acquisition and recovery of sparse signals. The recovery of such signals enables sampling rates to be significantly below the classical Nyquist rate. In this work, a framework was proposed, based on the idea of CS theory for the compression of heart beats signals. So, my sole aim is to apply Walsh-Hadamard transform to the original Electrocardiogram (ECG) signal in order to compress the signal with minimized errors. The proposed scheme is based on the sparse representation of the components derived from the Walsh-Hadamard transform of the original Electrocardiogram (ECG) signal. There are a lot of transformation techniques but the Walsh-Hadamard transform is more efficient than the other transforms. The ECG signals can be approximated by a linear combination of a few coefficients taken from a wavelet basis. This fact allows a compressed sensing-based approach for ECG signal compression to be introduced and to be a domain of search. ECG signals show redundancy between adjacent heart beats due to its quasi-periodic structure. This redundancy implies a high fraction of common support between consecutive heartbeats.</p>
	ECG Signals Compression Using Walsh-Hadamard Transform		

Student Name

Project Title

Supervisor  
& Company

Abstract





Mohamed  
Maher Farghaly  
Sadek

Indoor Location  
Tracking System  
using PIC  
microcontroller

Dr. Ashraf  
Ali

In This proposal system we will introduce the design and implementation of indoor position tracking system based on PIC micro-controller. The system uses the integrated PIC micro-controller and some components to estimate and calculate the location of the individual's device in a certain building. This proposed system aims for position monitoring and tracking software for who need to locate individuals having mobile devices and help also in advertise products and services. It is an integrated embedded and desktop system that helps building admin to get the location of any individual within a certain area. The proposed system is composed of a Server side Software which is a matlab application that runs over laptop and will help to display the positions of the nearby mobile phones and may be send location based advertising SMS. This system is aimed also to increase the accuracy and sensitivity of the system positioning estimation by selecting the correct number of neurons used in the neural network.

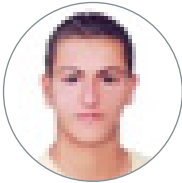

Student Name	Project Title	Supervisor & Company	Abstract
	Fahad H A O N Alnajdi		<p>Recently, there has been a significant increase in the number of different functionalities and radio systems included in handheld radio devices. In addition to the traditional cellular systems, many other radios have been introduced in mobile terminals, including FM radio, digital television (DTV), third-generation (3G), fourth generation (4G; or LTE, LTE-A, etc.), global positioning system (GPS), Bluetooth, and wireless local area network (WLAN). The average size (length, width) of the terminals has increased only slightly since the time when the terminals were used mainly for voice calls and low-rate data services and the average thickness has decreased despite the increased number of supported radio systems. At the same time, embedded built-in antennas are in practice the only type used in the devices. The volume available for antennas is very limited inside a mobile terminal, and thus the size of the antennas is a very critical issue.</p>
	Mohammad Mniar Shaker Al Mhamid	Design Compact Multiband Antenna for DVB and Mobile Applications	

Student Name	Project Title	Supervisor & Company	Abstract	
	Rashed E Y A Alyaqout	Massive MIMO Antenna for 5G	Dr.Fathy Zaky	<p>Recent advance on Multiple Input and Multiple Output (MIMO) have led the transformation from a point-to-point single user MIMO to multi-user MIMO (MU-MIMO). The MU-MIMO refers to a base station (BS) with multiple antennas simultaneously serves a set of single-antenna users, and the multiplexing gain can be shared by all users. With the staggering increase of wireless data traffic, massive MIMO enhancing MU-MIMO benefits has shown over 10 times spectral efficiency increase over a point to-point MIMO under realistic propagation environment with simpler signal processing algorithms. Massive MIMO is also known as "Large-Scale Antenna Systems", "Very Large MIMO", "Hyper MIMO", and "Full-Dimension MIMO", where each BS is equipped with orders of magnitude more antennas, e.g., 100 or more. This has brought a new paradigm for antennas and propagation society to tackle challenges to design over 100 antenna ports at base station with a set of new requirements. This introduction briefly reviews the progress from MIMO to massive MIMO, and addresses the key challenges for massive MIMO antenna array design via an example antenna array design.</p>
	Yaqoub J Dh F Gh Alzafiri	Massive MIMO Antenna for 5G	Dr.Fathy Zaky	

Student Name	Project Title	Supervisor & Company	Abstract
	Ahmed A. A. Alfarra .	Smart Airport Management Solution Dr.Fathy Zaky	<p>The airport has long been a primary point of service delivery for travelers undertaking a 'total trip' which encompasses a wide variety of stages from booking to destination. International Airports faces many problems regarding the Check in Passengers congestion, Luggage Weight Problems according to many passengers may have over weight, Gates and Terminals updates and Notifications, connecting flight information with real time updates, and many, all of this problems faces the international passengers in many airports, and from here the project idea created.</p>
	Mohamed Sameeh Mohamed Baker		<p>Airport management provides all the facilities for the passengers inside the airport but they are unable to utilize it due to lack of time, proper guidance or unawareness of the facilities at airport. In order to provide a better and reliable solution to this problem.</p>
	Rafiq zoheir Ayyad		
	Tarek Mohamed Tohami	SELF-COMPLEMENTARY UWB Antenna with Notch Dr.Fathy Zaky	<p>UWB communication systems have attracted great attention in the wireless world because of their advantages, including high speed data rate, extremely low spectral power density, high precision, low cost and low complexity. The Federal Communication Commission (FCC) allowed the 3.1-10.6 GHz unlicensed band for UWB communication in February 2002. This frequency band will cause interference with IEEE 802.16 (3.3-3.8GHz) Worldwide Interoperability for Microwave access (WiMAX) and IEEE 802.11a(5.15-5.85GHz) Wireless Local Area Network(WLAN). Therefore, the UWB antenna with band rejection characteristics is required to avoid possible interference between UWB and narrow bands like WiMAX and WLAN, at the same time.</p>

Student Name	Project Title	Supervisor & Company	Abstract
	Mark Ehab Shoukry	Electronic Water Billing System Dr.Maher Mansour	<p>Technology and Communication always try to make peoples life easier. So the main purpose of this paper is based on developing an automatic electronic water billing system in Egypt. In this paper, we design and implement a complete automatic water billing system without interference of any employees. All currently implemented systems depends on 1 bill for the whole building and water companies pay a lot of money for printing the bills and some meters are damaged or cannot take readings from. Our proposed system consists of smart meters. These meters are present in every house and will take the water readings and send them wirelessly to the water company base station via GSM modules. The readings are saved into the data base automatically and uploaded on the website automatically where the user can pay online. Frequent SMS notifications are sent to the user after each step. The proposed system is simple, cheap, fast and friendly user.</p>
	Michael Maher Ibrahim	Smart Communication System For Deaf-Dumb People Dr.Maher Mansour	<p>Deaf-Dumb people find a difficulty in communicating with normal people and so can't fully take part and become fully effective personnel in their societies.</p> <ul style="list-style-type: none"> <li>All the currently applied systems have a very limited database and so only a very limited number of signs can be translated and interpreted to comprehensible speech. However, our proposed system contains a much larger amount and so considered more reliable and practical.</li> </ul>
	Mina Magdy Abdelmasieh Mankarious	Smart Communication System For Deaf-Dumb People Dr.Maher Mansour	<p>Deaf-Dumb people find a difficulty in communicating with normal people and so can't fully take part and become fully effective personnel in their societies.</p> <ul style="list-style-type: none"> <li>All the currently applied systems have a very limited database and so only a very limited number of signs can be translated and interpreted to comprehensible speech. However, our proposed system contains a much larger amount and so considered more reliable and practical.</li> </ul>
	Manwel Maged Nasif Assad	Smart Communication System For Deaf-Dumb People Dr.Maher Mansour	<p>Deaf-Dumb people find a difficulty in communicating with normal people and so can't fully take part and become fully effective personnel in their societies.</p> <ul style="list-style-type: none"> <li>All the currently applied systems have a very limited database and so only a very limited number of signs can be translated and interpreted to comprehensible speech. However, our proposed system contains a much larger amount and so considered more reliable and practical.</li> </ul>

- All the current systems use ready-made flex sensors in the gloves of the deaf and dumb person and this ready-made flex sensor are unnecessarily over sensitive and so quite expensive for its required task and so this led us to think of a less expensive alternative eventually resulting in making our own flex sensors from scratch with a reasonable price just enough for our task.
- All the current systems that supports Arabic sign language use image processing to translate between sign language and Arabic language and so these systems are not portable due to their large and bulky hardware design. On the contrary, our system is the first system supporting Arabic sign language to just rely on sensors in the gloves and so making it portable.

Student Name	Project Title	Supervisor & Company	Abstract	
	Ahmed Toson Fouad Toman	Smart Grain Storage Monitor and Control System	Dr.Said Mabrouk	<p>Although we are living in an era of fast development in the technology of monitoring and controlling in the field of storage houses, Egypt still suffers from a huge scandals in this field especially in field of wheat that considered to be the main source of nourishment in Egypt that the poor people who represents the majority, depends on. From this point the proposed system suggested a new technique that never implemented before in Egypt to face the problems of huge costs that reaches up to billions of pounds, also the illegal addition of false quantities of wheat and the uncontrollable of the environment inside storage houses. The new technique depends on measuring the level of grains inside silos through an efficient level sensors and monitoring the environment through environmental sensors, all these parameters will be sent periodically to the main station via GSM module, and will be displayed automatically on the LCD. Through this device we tried to decrease the human interface and decrease any manipulation and fraud that is available in the current alternative systems.</p>
	Aya Mohamed Abdelmonsef Mohamed Ab- delaal	Smart Grain Storage Monitor and Control System	Dr.Said Mabrouk	





Student Name	Project Title	Supervisor & Company	Abstract
	Adnan Mo-hamed Yousri	MOTION COPYING ROBOTIC ARM USING LEAP MOTION Dr.Said Mabrouk	<p>In many fields of science , a robotic arm would be greatly beneficial , but these arms are quite expensive require a lot of programming since they move according to a given set of instructions and parameters Robotic arms are usually designed to carry out a single set of defined tasks . Unlike common gloves sensors , in this report the system discussed is a wireless sensing system with high accuracy used to detect human hand motion to be later implemented by the robotic arm , making use of advanced sensing technology using and electromyographic armband called the myo , and an infrared sensor called the leap motion sensor . the objective of this research is to be able to program a robotic arm and reprogram it for a different task later without the need of advanced programming knowledge using out setup to record using the sensors to accurately save the motion carried out by a human hand and then replay it using the robotic arm.</p>
	Ibrahim Hassan Labib	Hardware design and implementation of communications subsystem of Egy_Univer_Sat1 Dr.Somaia Mohamed	<p>Space technologies have evolved and developed by a lot of countries that is only developed by space agencies and technical engineers to create satellites. The main trend in development, test and operating satellite by student now is done through what is called cube satellite (CubeSat). CubeSat consists of several subsystems in order to function properly. Communications subsystem plays a significant rule in internal (communication between antenna and all subsystems) and external (communications between ground station and CubeSat) communication at CubeSat.</p>
	Hossam Hagag Ali	Hardware design and implementation of communications subsystem of Egy_Univer_Sat1 Dr.Somaia Mohamed	<p>Space technologies have evolved and developed by a lot of countries that is only developed by space agencies and technical engineers to create satellites. The main trend in development, test and operating satellite by student now is done through what is called cube satellite (CubeSat). CubeSat consists of several subsystems in order to function properly. Communications subsystem plays a significant rule in internal (communication between antenna and all subsystems) and external (communications between ground station and CubeSat) communication at CubeSat.</p>
	Mahitab Yasser Yahya	Hardware design and implementation of communications subsystem of Egy_Univer_Sat1 Dr.Somaia Mohamed	<p>Space technologies have evolved and developed by a lot of countries that is only developed by space agencies and technical engineers to create satellites. The main trend in development, test and operating satellite by student now is done through what is called cube satellite (CubeSat). CubeSat consists of several subsystems in order to function properly. Communications subsystem plays a significant rule in internal (communication between antenna and all subsystems) and external (communications between ground station and CubeSat) communication at CubeSat.</p>

Therefore, its needed to create specific communications subsystem to fit specification of CubeSat's mission. The main functions of the system are achieved based on selecting suitable components to fit specific requirement. In any satellite, the primary mission requirement is to establish a definitive link to send telemetry data from sensors and payload to ground control station (GCS) and to receive commands from GCS with minimum power consumption. The soul goal of this thesis is to present the hardware design and implementation of the communications subsystem with commercial of the shelf (COTS) components rather than using space grade components to reduce the cost and to test the subsystem before integration to fit Egy\_Univer\_Sat\_1 (EUS1) CubeSat.

Student Name	Project Title	Supervisor & Company	Abstract	
	Ahmed Abdel Kareem			<p>Subsystems are being developed to satisfy dramatically increasing efficiency, reliability, cost, and functionality. Communication subsystem plays a significant role in internal and external communication at CubeSat. It's needed to be designed to fit specification of CubeSat mission. Mission is testing a new space technology for National Authority for Remote Sensing and Space Sciences (NARSS). The main functions and algorithms of the proposed system are achieved based on establishing protocols for data exchange and controlling of communication subsystem, while the system is implemented based on microcontroller (MCU). Microcontroller is the brain of subsystem to manage any operation inside or outside subsystem and establishing of communication link. A primary mission requirement of any satellite is the ability to exchange information with a ground based command station, establishing a reliable link to send telemetry, health status from sensors and scientific payload data and being able to receive commands from Earth. After analysis for requirements and software target, the code will be implemented and tested with hardware integration of the designed board. The goal of this project is to design and implementation of the communication subsystem software to fit in the CubeSat Egy_Univer_Sat_1.</p>
	Mohamed Ibrahim Hany	Software design and implementation of communications subsystem of Egy_Univer_Sat1	Dr.Somaia Mohamed	

Student Name	Project Title	Supervisor & Company	Abstract
	Yasser Sobhy Farag	Two Way Ultra Wide Band Compact Power Divider	<p>The splitting of electromagnetic signals is a fundamental signal processing functionality in electronics. Many circuits exist in the RF and microwave designer's toolbox to facilitate effective signal splitting and recombination. The proper choice of circuit depends on the application and requirements; however, many engineers become confused due to the multitude of options available. From this point, we decided to make a two-way power divider, which is relatively different of some alternating systems with many features.</p>
	Ahmed Mohamed Hussein	Dr. Mahmoud Abdallah	<p>In this report, we will discuss how to achieve a two-way power divider, which is more compact, and how it works in ultra-wide band to connect with application of wide band frequencies as well as trying to decrease the power loss in addition to improve the output performance and power division. Furthermore, this report try to explain some methodologies to achieve with our project with this features. As we will explain later, we used metamaterial technique to decrease the size of the component. Also how to make a micro-strip slot-line. In addition to the technique of transferring by mutual induction.</p>
	Hania Sherin Omar	High Selective Compact Microwave Resonator	<p>This topology introduces an ultra-compact resonator, working for multiband response, compared with previously designed multiband resonators. This design will achieve the compact size and the multiband function by using the DCRLH-TL configuration along with meander line. The DCRLH-TL has proved to maintain sharpness better than the CRLH-TL and simplicity in its design. This structure will accomplish a high quality factor, along with a low insertion loss and return loss, and will work on multiple WLAN frequencies.</p>
	Omar Tarek Hussein	Dr. Mahmoud Abdallah	


Student Name	Project Title	Supervisor & Company	Abstract
	Donya Zakaria Mohamed Monib Nazif	Dual Notching of UWB antenna using electromagnetic band gap structures  Dr. Mahmoud Abdallah	<p>In this project, an ultra-wideband (UWB) monopole antenna will be used which functions within the range of (3.1 GHz – 10.6 GHz) as approved by the Federal Communication Commission (FCC). A Dual notch nearby WiMAX frequencies range (3.5 GHz – 5.8 GHz) will interpolate within the UWB spectrum. Using electromagnetic band gap (EBG) cells coupled to the antenna feeding line will reduce the size of the antenna, high data rate, and high notching selectivity. The achieved results for the S-parameters should be below minus 10 dB for reflection coefficient over the spectrum and the rejection of two frequencies within the range of WiMAX for the dual notch. The use of two notched bands is to eliminate interference with wireless local area networks. The obtained results are simulated using full wave simulations.</p>
	Kirolos Bassem Amin Hagra	Flexible antenna for wearable applications  Dr. Mahmoud Abdallah	<p>The fast improvement of the wearable specialized gadgets area conjures the requirement for superior, vigorous and adaptable radio antennas. The reception apparatus necessities for body worn gadgets are very unique contrasted and the ones for their traditional partners. Contingent upon the application, the reception apparatus should be little in size and equipped for giving adequate transmission capacity to correspondence.</p>

Its radiation example pattern to be guided outwards from the clients' body to keep away from dielectric coupling and guarantee insignificant absorption by the body. Besides, since the used substrates are typically adaptable and more muddled to fabricate, the radio antenna typologies must be kept as straightforward as would be possible.

In this report we discuss a patch antenna which is made from flexible materials. This would allow it to be flexible and bendable to fit the application needed.

With the broad utilization of remote gadgets inside or at nearness to the human body, electromagnetic impacts brought on by the collaboration between RF waves and human tissues should be considered with foremost significance.

The parameters of the antenna will vary depending on the application needed or the purpose

Student Name	Project Title	Supervisor & Company	Abstract	
	Raneem Samy Abdelwahab Rabie	Mutual Coupling Reduction between MIMO an- tennas sys- tem using electro- magnetic band gap structure	Dr. Mahmoud Abdallah	This thesis deals with the design and analysis of antenna structures for WLAN operating in the wireless frequency bands. It is desired to design a compact multiband antenna with MIMO capabilities and high isolation between antenna elements. For this reason, Electromagnetic Band Gap (EBG) has been proposed and can be applied to the antenna with NxN MIMO. A 3D-EBG structure can be designed and applied to the antenna ground plane for surface wave suppression and improved isolation between antenna elements
	Yasmin Tarek Mahmoud Hammad	An Inte- gerated LPF and BPF for High Selective Filtering	Dr. Mahmoud Abdallah	Wireless microwave communication systems demand high-performance compact band pass filters with low insertion loss and high selectivity along with flat group delay in the passband. The main issue in microwave filter design is the tradeoff between high selectivity and compactness. Finding a realization of the proposed filter that satisfies each of the requirements-of which some are contradictory-to a sufficient degree to allow minimum signal degradation and efficient use of frequency, is the main objective of this project. The proposed planar filter is designed by employing an integration of a band pass filter (BPF) and a low pass filter (LPF) using microstrip technology to improve the roll-off factor and consequently the selectivity. Unlike some current systems that use the defected ground approach to guarantee the miniaturization of the filter, the proposed filter should be uniplanar which allows the minimization of power loss. Therefore, the proposed filter should be power-efficient, compact, and highly selective, which are all sought-after features in the field of wireless communications.
	Zeinab Kamal Mohamed Fouda			

Student Name

Project Title

Supervisor  
& Company

Abstract




Ahmed Samir  
Habeeb

PLC -Based  
Control  
System for  
Intelligent  
Garage


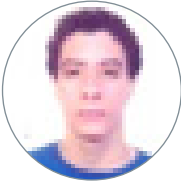
Dr.Sherif  
Kamel

For, demonstrates a prototype development using PLC and SCADA. PLC is the world best known and most widely used in industrial automation. Now, a huge number of people use cars every day. In big cities, parking spaces have become a very big problem and people need to save time by avoiding looking for parking areas. Parking cars in the streets are not safe and this is one of the main problems of parking cars. One particular solution is the automobile turntable, which has been used successfully in a variety of applications, including commercial and residential. PLC based intelligent garage is very good systems in our life. The intelligent garage is useful for people to park their cars and leave cars safe and secure. There are many systems introducing smart parking but it has many problems. The proposed system, solve most of the problems and make this garage is used very useful for people. Programmable logic control (PLC) issued to control operation in the garage. The DC motor will take the car up or down and park it in empty slots in the garage. To show all of this operation we use supervisory control and data acquisition (SCADA) to monitor all operations in the garage and give the status, faults, and alarms in the garage to avoid problems. It is shown that by applying the proposed technique the intelligent garage will help people to reduce wasting time searching for places to park cars. This garage is very high secure and people leave their cars in it without any fear.
















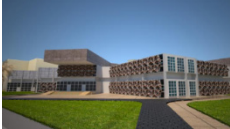
Student Name	Project Title	Supervisor & Company	Abstract
	Basem Sherif Kamal	Dr.Sherif Kamel	<p>Every day we have an increasing in our population number so that bring us to build a new cities to accommodate the extra number of people so, there will be more sites that contains a lot of workers and to safe workers live we have to make an tool with smart actions to keep workers life safe, and that will be done by using a smart helmet that will followed up worker health conditions, environmental conditions, and locate his place in the site. In the proposed system the main objectives are to build a connected helmet using a microcontroller, tracked by GPS, senses environmental conditions, human conditions, and make smart actions to decrease number of death by falls. Other systems like a smart helmet for riders use a smart helmet to observe the speed of the motor cycle, and give the rider an alarm to notice his speed. To build the helmet we need some main parts to have like ARM microcontroller, GPS, GSM module, collections of sensors like heart rate sensor, lock sensor, temperature and humidity sensor, shock sensor, and the proposed design of the power circuit.</p>
	Ahmed Mo-hamed Hosny		
	Ahmed Mo-hamed Borham	Dr.Sherif Kamel	<p>Visualization, a word that describes the whole advertising industry. By using this technique with addition to technology, this project will be able to take its' customers to a new journey. A touch screen on each table in the restaurant will be used by the customers to view all the menu items, select the desired dish and also call the waiter if needed. When the customer finishes selecting the order, it will be sent through Wi-Fi to the kitchen's computer. As soon as the order is prepared, the customer will be notified by receiving a notification on the touch screen. The embedded system is using ARM cortex-m7 processor for the configuration of the TFT LCD and communicating with the kitchen through Wi-Fi.</p>
	Omar Emad Mostafa Abd El Aziem Mahmoud		

















Student Name	Project Title	Supervisor & Company	Abstract
	Moemen Amr Abdelwahab Selim Elzeiny	Riot Control Monitoring & Support Sys- tem (RCMS)  Dr.Sherif Kamel	<p>Riot control sector play a difficult role in every nation's internal affairs, however, in the past decade many challenges has been facing this sector internationally and a nationally as well, resulting into some problems that have been identified. The Egyptian Central Security Forces are the main department that runs the riot control sector, it is noted that they do not utilize any form of modernized framework to monitor, track and manage they operations which causes many of the problems identified for example the inaccuracy and inefficacy of commands due to lack of data. A Riot Control Monitoring and Support System is proposed as a multi-functional management solution that aims to provide seamless operation command and increases the operational capabilities of the maneuver units from battalion to platform/single conscripts level. The design of this system was divided into three layers, Embedded systems layer which is represented by the in-field wearable and stationary devices that provide geospatial and physiological data to the system, Server-Side layer which communicates with the embedded systems layer, also is responsible for storing, structuring and feeding the entire system with the required data and Client-Side layer that enables the user to display visualized data, control and manage the entire system. The main and most important achieved objective of this system is to reduce the casualties in operations on both parties.</p>


















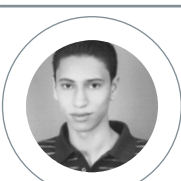

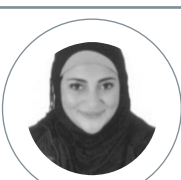

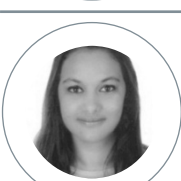

Student Name	Project Title	Supervisor & Company	Abstract
	Khaled Adel Omar Ezzat Ali Ezzat		<p>Material handling is a necessary, but expensive in manufacturing. Insufficient material handling causes additional costs in time and cost of labor. Effective material handling solutions can reduce a production or distribution facility's cost by significant. Forklift is an example of material handling machines. In general the forklift can be defined as a tool capable of lifting hundreds of kilograms. The Aim of this project was to design and develop an autonomous warehouse forklift using the vision technique we will use the Kinect in order to map the working environment, so the robot can avoid obstacles, the navigation method of the kinect depends on the differential drive model using the wheel encoders.</p>
	Omar Hos- sameldin Mo- hamed Elazab Ibrahim	A visually guided au- tonomous forklift  Dr Mahmoud Hanafy	

3-Architecture  
Fall 2016 - Spring 2017

Student Name	Project Title	Project Picture	
	Abdalmahsen H Albather	Egyptian History Museum	
	Abdulhadi Abdulrahman Alhendi	Egyptian History Museum	
	Adham Elsayed Kamel Mousa Elsayed	Culture Center	
	Ahmed Ayman Ahmed Elbayoumi Saleh	Injury Rehabilitation Center	
	Ahmed Rafat Mohamed Ahmed Badawy	Egyptian Traditions Museum	
	Ahmed Sayed Laithy Abdelkareem Mohamed	Egyptian Traditions Museum	
	Ali Salaheldin Ali Touson Khattab	Amazeeq Cultural Center	
	Ammar K. A. Alabadla	Cultural Center	

Student Name	Project Title	Project Picture	
	Basel A S M Alenezi	Egyptian History Museum	
	Belal Sameer Elsaid Ibrahim Massoud	Akhmim Museum	
	Ehab Ahmed	Akhmim Museum	
	Hashem Ahmed Refaat Naguib	Injury Rehabilitation Center	
	Hussein Ahmad Omar Bakeer	Egyptian Traditions Museum	
	Karim Alaaeldin Issa Abdelhamed	Akhmim Museum	
	Karim Moataz Abdelhamid Elsayed	Rehabilitation Center	
	Maged George Makram Georgy	Rehabilitation Center	

Student Name	Project Title	Project Picture	
	Maged Mohamed Ezzat Hassan Bakr	Akhmim Museum	
	Mahmoud Said Ali Eid El-salamouny	Culture Center	
	Marina Nageh Kamel Beshay	Rehabilitation Center	
	Mohamed Alaa Ahmed Mohamed	Rehabilitation Center	
	Mohamed Hany	Amazeeg Cultural Center	
	Mohamed Hassan Sayed Bashandy	Rehabilitation Center	
	Mohamed Ismaeil Mohamed Ismaeil	Injury Rehabilitation Center	
	Mohamed Mostafa Ahmed Badawy	Injury Rehabilitation Center	

Student Name	Project Title	Project Picture	
	Mohamed Reyad Mahmoud Fayad	Egyptian History Museum	
	Mohamed Sayed Mansy Sayed	Akhmim Museum	
	Mohammad Mooh Al Hussain	Egyptian Traditions Museum	
	Muneer Jamil Daoud Alzamid	Egyptian History Museum	
	Nayef M S T S Alazemi	Egyptian History Museum	
	Ramy Tarek Mohamed Shamseldin Hassan	Cultural Center	
	Rana Hesham Hassan Mohamed Eltonsy	Egyptian Traditions Museum	
	Samar Samir Mohamed Hussein Elrashidy	Akhmim Museum	

Student Name

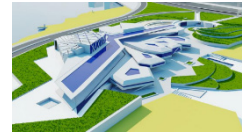
Project Title

Project Picture



Samweil Eid Gouhar Shehata

Egyptian Traditions Museum



Sara Amgad Said Ibrahim  
Elkady

Egyptian Traditions Museum



Yassmin Ahmed  
Soliman Afifi

Rehabilitation Center



Student Name

Project Title

Project Picture



Ahmed Ashraf  
Abdel Halim

BUSINESS PARK  
At Al Wekala



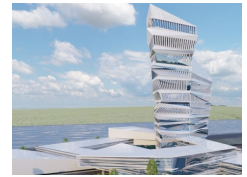
Ahmed Mohammed  
Hasan Al-Tameemi

DESCRIPTION

The idea of this project was to face the “2050” planning strategy changing “Al-Wekala” district into business hub. The business park would be a transitional factor between the current state, and the future initiative. The business park will not just conserve the industry, it will also help the people elevate and prosper under high economical industrial and living standards, through an international based banking service, exhibition centre, office/conference centre, stock market and a public plaza for entertainment.



Aya Mohamed  
Radey Abo-Arb



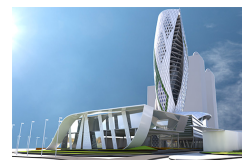
George Nagy Fahmy Botros



Mahmoud Ahmed  
Ahmed Alm



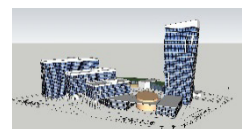
Mohamad Fouad  
Nader Hanifa



Omar Khatab  
Ali Teleb

SUPERVISOR:

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh EL Feki  
Dr. Rania EL Me-seidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. HatemFayed  
Arch. Mohamed Anees



Waleed Abd- El-Aziz Abd-El-  
hady





Student Name

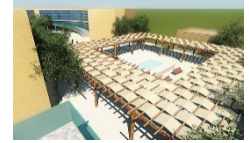
Project Title

Project Picture



Amr Ismail Badr  
El Din Abaza

RECYCLING HUB  
At Al Wekala



Ghassan Monther  
Nasri Khzouz

**DESCRIPTION**

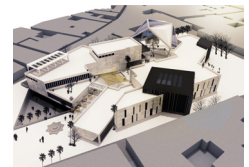
Constructing a Recycling Hub in a rich context such as Wekalet El-Balah, knowing that Wekala is already familiar with the recycling intervention (iron something and car spare parts), hence the aim of creating a Zero-Waste community. The project aims that the area of Wekalet El-Balah reaches whole development on commercial and industrial levels, and helps spread such awareness among locals acting as a tool for community development.



Islam Amr Ibrahim Salem



Mirna Adel Mohamed Metwally Khalifa



Mohamed Ahmed  
Wafik Ezzo



Olvy Mohamed Abd El-Rahman Bakry

**SUPERVISOR:**

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. HatemFayed  
Arch. Mohamed Anees



Student Name

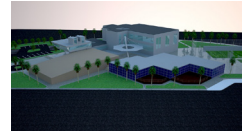
Project Title

Project Picture



Abdulla Saied Abdull  
Karim Mohamed

YOUTH CENTER  
At Al Wekala



Aya Ahmed Fathy Sadiq

**DESCRIPTION**

Youth Centre is a body of youth educational qualification of public interest and has a legal personality independent, contribute to the development of young persons and young people to invest their free time in the practice of the various cultural activities, social and sports, national and seeks skill acquisition, which provides for responsibility in the framework of the law and public policy State. Given the importance of the role played by the play of these centres and work to transform youth centres into productive centres with developmental in nature offering various cultural and social services and exercise an active role in the development of concepts and values prevailing in the different youth sectors are implemented.



Hassan Aziz Saleh  
Babtain



Marian Adel Azmy  
Agban



Mohamed Abdo Ahmed  
Salami



**SUPERVISOR:**

- Dr. Hisham Gabr
- Dr. Omar Fawzy
- Dr. Sameh El Feki
- Dr. Rania El Meseidy
- Dr. Ismail M. Mohie
- Dr. Ahmed Nesim
- Dr. Mohamed Mahgoub
- Dr. HatemFayed
- Arch. Mohamed Anees

Student Name

Project Title

Project Picture



Ahmed Mohamed Abd Allatif Alshekh

BOOK FAIR + PUBLISHING HOUSE  
At Azbakeya / Downtown



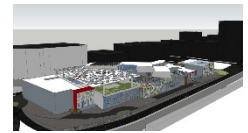
Ali Mustafa Abbas Al-Ogaidi

**DESCRIPTION**

Copy right issues have long been problematic at Al-Azbakeya. The point of this project is to create a space housing different publishers not only those regulating the sales and publishing of books and insuring their legality. Part of the project also contains classrooms, reading spaces, and exhibitions attracting different visitors to the place.



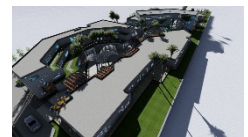
Azza Sabri Mohamed El-Sayed



Eshak William Abdo Kadies



Hassan Ahmed Abd Al-hamed Ali



Mohamed Ayman Mohamed Khamies

**SUPERVISOR:**

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. Hatem Fayed  
Arch. Mohamed Anees



Mohamed Hani Hussein Mostafa Elkerdasy



Mohammad Mujeeb Hassan Al-Shabrawi



Student Name

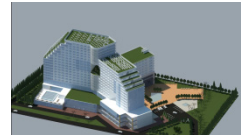
Project Title

Project Picture



Abd El Rahman Adel El Leboudy

HOTEL + MALL  
At Al Wekala



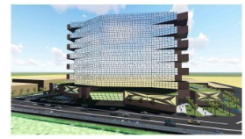
Abdalrahman Ahmed  
Mohsen Abbas Al-Ogaidi

DESCRIPTION

The purpose of this project is to create an outlet space for the traders of Al-Wekala making their goods more accessible, while providing a hotel overlooking the Nile as a form of income generation.



Ahmed Sherif  
Mahmoud Mohamed



Ali Sadek Youssef Albather

SUPERVISOR:

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. Hatem Fayed  
Arch. Mohamed Anees



Hosny Moustafa  
Hosny Ahmed



Mohamed Tarek  
Hassan Aly El-Deib



Moustafa Aly Moawed  
Abdel Hamed Rizk



Student Name	Project Title	Project Picture
	<p>Ahmed Mohamed Farahat Ahmed AlLabbad</p> <p>ARTS &amp; PREFORMANCE CENTER At Attaba/ Downtown</p>	
	<p>Ahmad Yousef Ahmad Al-Qarneh</p>	
	<p>Alaa Mohamed Abou El Enein Shetewi</p>	
	<p>Esam Abdulaty Ibrahim Abdulaty Mady</p>	<p>N/A</p>
	<p>Kheloud Belal Abdul El Sayed Badawi</p>	
	<p>Marwa Ahmed Rabie Ahmed Ismail</p>	
	<p>Mohammed Abbas Amin Mohammed Shiha</p> <p><b>SUPERVISOR:</b> Dr. Hisham Gabr Dr. Omar Fawzy Dr. Sameh El Feki Dr. Rania El Meseidy Dr. Ismail M. Mohie Dr. Ahmed Nesim Dr. Mohamed Mahgoub Dr. HatemFayed Arch. Mohamed Anees</p>	
	<p>Nermin Akram Shaban Mohamed</p>	

Student Name

Project Title

Project Picture



Noha Yasser Abd-El-Aziz  
Mosselhy



Ahmed Mohamed  
Salman Mohamed



Marwa Abdelraouf Anwar  
Youssef



Mohamed Ahmed  
Mahmoud Elsedawy



Mohamed Alaa El-Din Fakhry  
AlSharkawy



Mohamed Sayed  
Abd El-Reheem



Mohamed Wasel Salah  
Mohamed Elsayed



Nourhan Mohamed  
Hesham El Sayed





Nour Kamal Mohamed  
Abdelaziz



**Student Name**

**Project Title**

**Project Picture**



Alaa Mohamed Abou El  
Enein Shetewi

UNDERGROUND ARTS HUB  
At Opera Sq./ Downtown



Esam Abdulaty Ibrahim  
Abdulaty Mady

**DESCRIPTION**

The aim of this project is to restore the old "Downtown" identity. Encouraging arts and cultural programming for children and adults. Multi-cultural, multi-disciplinary artistic and educational opportunities to expand cultural horizons and improve the quality of life. Opportunities to increase artistic skills, enhance creativity, and develop socially.



Kheloud Belal Abdul El  
Sayed Badawi



Marwa Ahmed Rabie Ahmed  
Ismail



Mohammed Abbas Amin  
Mohammed Shiha



**SUPERVISOR:**

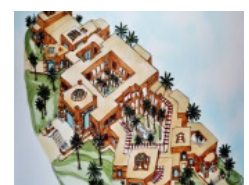
Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. Hatem Fayed  
Arch. Mohamed Anees



Nermin Akram  
Shaban Mohamed



Yara Ahmed Abd El Wahed  
Hefny





Yasmine Khaled Abd El Moneim Ibrahim



Youmna Ahmed Hassan Fouly



**Student Name**

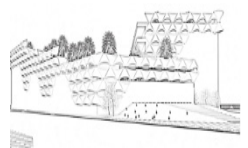
**Project Title**

**Project Picture**



Mohamed Ahmed Mahmoud Elsedawy

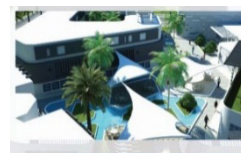
**CIVIC CENTER**  
At Opera Sq./ Downtown



Mohamed Alaa El-Din Fakhry AlSharkawy

**DESCRIPTION**

The strategic location of the Opera Sq. makes it ideal for a civic centre. A civic centre is a prominent land area within a community that is constructed to be its focal point or centre. It usually contains one or more dominant public buildings, which may also include a government building. As the area has already transitioned from its original residential activity to more commercial activates within residential buildings, it is high time to provide a space addressing this issue attempting to enhance the area.



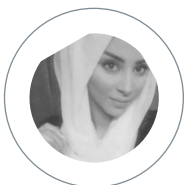
Mohamed Sayed Abd El-Reheem



Mohamed Wasel Salah Mohamed Elsayed



Nour Kamal Mohamed Abdelaziz



Safaa Hazem Abd El Hamid Suliman

**SUPERVISOR:**

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie

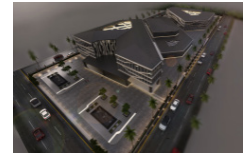






Zainab Layth Khudhair

Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. HatemFayed  
Arch. Mohamed Anees



**Student Name**

**Project Title**

**Project Picture**



Mohamed Aly Ahmed Abu Seif

LIBRARY AND PUBLISHING HOUSE  
At Azbakeya / Downtown

N/A



Ahmed Adnan Ahmed Abd Rabou

**DESCRIPTION**

The public library project is intended to serve multiple functions ensuring the efficiency of each function. A combination of the unique location, the area's authenticity, and the residents/constructions relation is behind the necessity of such a project. The aim is to re-ensure the critical location and its link in serving knowledge as it was one day considered as Egypt's knowledge hub. Taking in our consideration to achieve all the environmental, and the ecological goals.



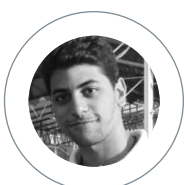
Ali Abd-El-Naser Mohamed Al-Husseini



Amr Gamal Aziz El Din Abd El Ati Morsy



Karim Nabil Abdel-Fatah Baioumy



Omar Ezzat Omar Mohamed Youssef

**SUPERVISOR:**

Dr. Hisham Gabr  
Dr. Omar Fawzy  
Dr. Sameh El Feki  
Dr. Rania El Meseidy  
Dr. Ismail M. Mohie  
Dr. Ahmed Nesim  
Dr. Mohamed Mahgoub  
Dr. HatemFayed  
Arch. Mohamed Anees

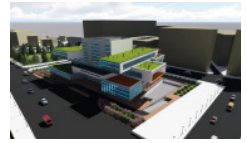


Salem Atef Mohamed Aly Ahnish

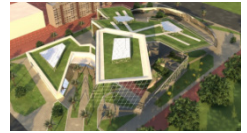




Saif Eldin Mostafa Morsy  
Ahmed



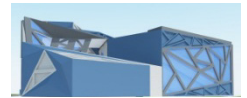
Abd Elaziz Mohamed  
Gamal El-Sebaei



Abdel Hamid Mohamed  
Abdel Hamid Othman



Ahmed Yousri Ali Sadek  
Diab



Amr Mohamed Magdy  
Aly El-Faramawi



Karim Magdi Hassan  
Awad



Mohamed Hamdy  
Ibrahim El Moghazy



Mohamed Magdi  
Hassan Awad





Mohamed Mohsen  
Al-Mohammady Abdalla



Ola Yasser Mahmoud  
Mohamed Abu Elenin



Karim Awny Abdelkarreem  
Abdelgawad



Omar Khaled Hossny  
Beshir Hassan



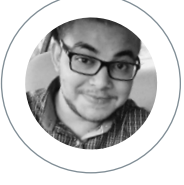
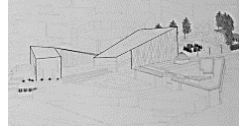
Osama Essam El-Din  
Othman Ezz El-Din



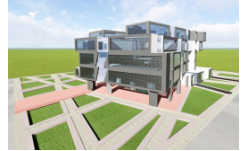
Mohamed Ismail Embaby  
Ismail







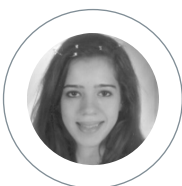
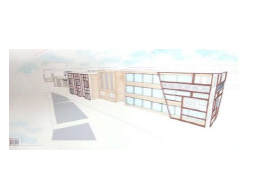









Salah Mohamed Salah  
Hassan





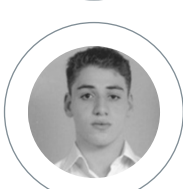







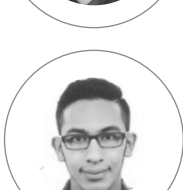

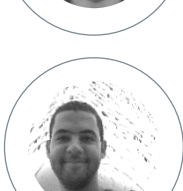



Sayed Tarek Sayed Mo-  
hamed Abdallah



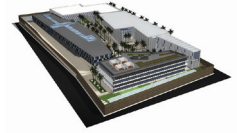
Student Name	Project Title	Project Picture
	Ehsan Ismail Mohamed Fathy Naguib  BUSINESS CENTER At Attaba / Downtown	N/A
	Eslam Ahmed Ismail Amin  <b>DESCRIPTION</b> For the last 40 years, residential buildings declined in Opera and Attaba districts because of the high demand of commercial and administrative by the occupants. This led to a quick deterioration of many building because they were not designed to be used as offices or shops.	
	Hiba Nihad Sat Alyaman	N/A
	Hisham Sayed Mohammed Mohammed Ismail	
	Mariam Mohamed Fawzy Badr-Eldin Abbas	
	Mena Abdel-Massih Zaky Habel  <b>SUPERVISOR:</b> Dr. Hisham Gabr Dr. Omar Fawzy Dr. Sameh El Feki Dr. Rania El Meseidy Dr. Ismail M. Mohie Dr. Ahmed Nesim Dr. Mohamed Mahgoub Dr. Hatem Fayed Arch. Mohamed Anees	
	Mostafa Mahmoud Al-Refaie Mohamed	
	Omar Ahmed Hussein Ahmed Ali	

Student Name	Project Title	Project Picture
	Dalia Sameh Kamal Mohamed  VOCATIONAL SCHOOL Al Wekala	
	Esraa Mohamed Saleh Abdel Maksoud  <b>DESCRIPTION</b> The project mainly deals with the educational problems as well as industrial/economical problem faced in Al-Wekala. Thus, the vocational school links these issues and benefiting the community.	
	Hadeer Medhat Mohamed Sahab El Nahas  The system benefits include outcomes occurring at individual, organizational, societal level and economical and educational level leading to a sustainable project, and a sustainable, stable society.	
	Hossam Mohmed Tarek Faek Hussein Shaaban  The system benefits include outcomes occurring at individual, organizational, societal level and economical and educational level leading to a sustainable project, and a sustainable, stable society.	
	Maha Taha Al-Boray Al-Shalaby  N/A	N/A
	Marwa Abdulnasir Muhmmmed Abdulall  <b>SUPERVISOR:</b> Dr. Omar Fawzy Dr. Hisham Gabr Dr. Sameh ElFekki Dr. Ahmad Nessim L.A. Alaa Alsherif L.A. Faress Yasser	
	Nada Hamdy Soliman Abdelrahman  L.A. Alaa Alsherif L.A. Faress Yasser	
	Sarah Ragheb Elhanafi Elsergany  L.A. Alaa Alsherif L.A. Faress Yasser	

	Student Name	Project Title	Project Picture
	Sherouk Tarek Mohamed Taha		
	Abd-El-Rahman Mohamed ElHiatmy		
	Ahmed Mohamed Mohamed Nour Salem		
	Essam Eldin Mohsen Mo- hamed Ali		
	Islam Ali Ibrahim Metwally Elnahrawy		
	Mahmoud Gamal El-Sayed Ahmed Tafesh		
	Mohab Maged Abd El Wa- hab Ali		
	Mohamed Abdelaziz Wahid Abdelaziz		



Mohamed Hesham Abdelfatah Ahmed



Omar Mostafa Hassan Ibrahim



Student Name

Project Title

Project Picture



Mohamed Aly Ahmed Abu Seif

TRANSPORTATION HUB  
Opera Sq. or Attaba / Downtown



Ahmed Adnan Ahmed Abd Rabou

**DESCRIPTION**

After breaking down the problems, which seem to be vehicular and pedestrian problems: the congestion due to the high flow of people, the insufficient number of parking slots, lack of identity in the area and street vendors and informality within the area. It was concluded that our main concern is to organize the means of public transportation as there is a contradiction between the various types of transportation which leads to these problems. Therefore, the ideal project for the area would be a "Transportation Hub" in Attaba, organizing the conflict in the various public transportation as the metro, bus, Suzuki, taxis and private cars, while containing the huge flow of people in that area in the area.



Ali Abd-El-Naser Mohamed Al-Husseini



Amr Gamal Aziz El Din Abd El Ati Morsy

N/A



Karim Nabil Abdel-Fatah Baioumy



Omar Ezzat Omar Mohamed Youssef





Yara Omar  
Ali Ismail



Ahmed Abdallah  
Abdelhy Elbana



Aya Mostafa  
El Gameel Shahin



Khaled Hesham Abdel Halim  
Elmasry



Mohamed Abdelkader  
Helmy Abdelkader



Mohamed Khaled  
Mohamed El Metwaly



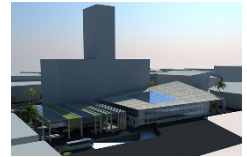
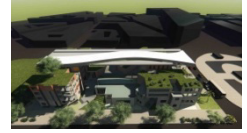
Noha Adel Khalil Ibrahim



Nour Mohamed  
Soliman Khedr

**SUPERVISOR:**

Dr. Omar Fawzy  
Dr. Hisham Gabr  
Dr. Sameh ElFekki  
Dr. Ahmad Nessim  
L.A. Alaa Alsherif  
L.A. Faress Yasser



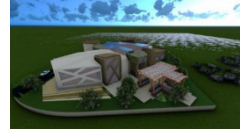




Omneya Barakat  
Farouk Barakat



Ahmed Mohammed  
Tawheed Ezzat



Distinguished Graduation Projects  
Class 2016-2017

# I- Major: Electrical Systems Engineering (ESE)



Omar Hatem Mohamed  
Kamal Hegazy  
omar.hatem@msa.edu.eg

Title of Project: Fire Fighter Robot

Supervisor: Dr. Hatem Zakaria



Islam Nader Awaad  
Ibrahim  
SK8T\_SEEKER@hotmail.com

## Abstract

Nowadays, technology takes us a step forward as days' pass. Our objective of the project is to help mankind to fight fire easier than before, using the robotic technology to do so. The project is consisted of a robot that indicates automatically where is the fire, in addition to fighting it with the minimal intervention of human. We also added a fine touch to the project, which is sending an SMS message that contains the location of the fire using GSM alongside with GPS technologies. As we go through the report, we will cover all the white and black boxes of the project in specific details. Finally, the project is considered as a sample of what can be implemented by a certain company, if they inherited our project to implement it in real life.

The image shows the cover of a project report titled "Firefighter Robot". The cover features the logos of the University of Greenwich and MSA University. The main title "Firefighter Robot" is prominently displayed. Below the title, there are several sections: "Aims and Objectives:", "Results:-", "Methods:-", and "Conclusions". To the right of the text, there is a block diagram showing the system architecture with components like Battery, Arduino Uno, GSM, GPS, and a Fire Detector. Below the diagram is a photograph of the robot's front view, showing a red fire detector and various electronic components. At the bottom left, there is a photograph of the robot's top view, showing its circular base and various sensors. The cover is designed with a white background and rounded corners.

# I- Major: Electrical Systems Engineering (ESE)



Omar Mohamed Farouk  
Sallam  
omarfarouk\_6651@live.com

Title of Project: Design and  
Manufacture of an Automated Guided  
Vehicle (AGV).



Supervisor: Dr. Mohamed Sobih

Amr Mohamed Mohamed  
AbouelLella Aly  
amr\_mohamed2104@yahoo.com

## Abstract

An Automated Guided Vehicle (AGV) is a cooperative driverless vehicle that improves the material handling system inside any manufacturing plant to an entirely new level. The main focus of this project is the conception, planning, and implementation of the system of an AGV. The timeline that is adopted throughout this research starts by the thinking process of how to create an AGV system and ends with the AGV being capable of doing its job perfectly inside the chosen plant. In order to successfully achieve this goal, the suitable type of AGV that would be capable of transferring the material used in production is chosen. Then the navigation method that would maximize the efficiency of the system while remaining in budget is selected. Also the communication method between the navigation method and the motors on board is selected.



**Design and Manufacture of an  
Automated Guided Vehicle (AGV)**  
Omar Mohamed Farouk 133947  
Amr Mohamed Abou El Ela 133495  
BEng (hons) Industrial Engineering 2016-17



**Aims and Objectives:-**  
Design and manufacturing of an AGV aiming to:-

- Introduce a new method of material handling
- Eliminate wasted energy and time
- Reduce production costs

**Background:-**

The plant specializes in sheet metal work, and its main business is the design and manufacture of machine structures. This is a complex task since it requires that a machine structure be designed and manufactured in the shortest possible time and with the lowest possible cost. The plant produces a large number of machine structures for the plant and other manufacturing companies. The plant has a large number of machine structures that are used in the manufacturing process. The plant has a large number of machine structures that are used in the manufacturing process. The plant has a large number of machine structures that are used in the manufacturing process.



The produced AGV carrying 500 kg load

**Results:-**

- Better utilization of the workers' time and energy.
- Better working and measurement of production.
- Increased worker safety and worker health.
- Increased production rate.
- More profit from production, as more time is saved in production.
- Minimizing transportation costs.
- Achieving easy communication between different work stations.

**Conclusions**

Digital signal processing proved to be a method that could increase the reliability and stability of the AGV system. The AGV system was designed and manufactured in the shortest possible time and with the lowest possible cost. The plant produces a large number of machine structures for the plant and other manufacturing companies. The plant has a large number of machine structures that are used in the manufacturing process. The plant has a large number of machine structures that are used in the manufacturing process.

**Methods:-**

The solution was to use the problem using the existing automated guided vehicle system. It can handle different system and types of materials being loaded. The plant will increase in the complexity of stages of work in production as to accommodate for the multiple different parts being manufactured. The main aim of the AGV is to improve the manufacturing process. The AGV system will allow the worker to move the AGV from one station to another. The AGV system will allow the worker to move the AGV from one station to another. The AGV system will allow the worker to move the AGV from one station to another.



Schematic Drawing for the proposed design



3D model of the complete assembled AGV

# I- Major: Electrical Systems Engineering (ESE)



Ahmed Jamal Amin Saleh  
Alqeema  
ahmedalqeema@hotmail.com

Title of Project: DSurveillance  
System Using Face Recognition  
Technique

Supervisor: Dr.Waleed El Nahal

## Abstract

Through the last three decades Biometrics have received substantial devotion and a significant implementation in numerous applications such as border control/airports, health care, justice/law enforcement and Logical access control, Despite of the fact that there are various surveillance and security systems consuming great amount of power are existent in market these days, criminal and robbery rate have gone very high. The proposed project targets the ability of enhancement and improvement of biometric surveillance systems to reach higher levels of security based on verification. The proposed system captures biometric information or in simpler words the biological/physical traits of the subjected personals, aiming to collect the maximum sum of data attainment which is ordinary and may be nonsense to the user. Accordingly, the decision of a biometric system was available to associate two different techniques of biometric measurements to achieve high precision and consistency. The proposed project is aiming to prevent theft in highly secured areas with greater precision and inferior cost. The proposed system has face detection and recognition technology which donates access to solely authorized personals to enter that area. At the incidence of unauthorized access by any means the system then alerts the security personals, sending them the exact location of the breach, in addition to the intruder face picture. This project plans two main sub systems namely face recognition and face detection. By which a webcam captures an image and then the system compares it with the previously saved database. If the sample is an unauthenticated one and there was a security breach the security personals will be alerted.

# I- Major: Electrical Systems Engineering (ESE)



Mohammed Hosny Saleh  
Hussein Hatem  
Mohamed.hosny2@msa.edu.eg

Title of Project: Portable 3-axis  
polar-coordinates CNC

Supervisor: Dr.Waleed El Nahal

## Abstract

In any hardware Manufacturing CNC machines is a very important tool, it's commonly used in mass production and prototyping of PCBs, hardware body, accessories, artworks, etc...

Although, most of 3-axis CNC machines are very expensive, massive power consumer & huge in size to be used by individuals. In the proposed project, polar coordinates algorithm is used rather than Cartesian coordinates that will allow me to change the mechanical design of the ordinary 3-axis CNC machine and throw out one and a half axis and use rotary table instead, of course this will affect hugely the power consumption and the cost to manufacture the machine also this will make it portable.

The main functions and algorithms of the proposed system are achieved based on polar coordinates. The technology used to achieve so is using Controller Board and custom made software to control the machine.

It is shown that by applying the proposed technique the size of the CNC machine will be reduced to be portable, the power consumption & the cost this will make it affordable by individuals like students, developers, small business startups, etc....

# I- Major: Electrical Systems Engineering (ESE)



Ali Mohamed Elsaeed Sayed  
Ahmed  
ali.mohamed11@MSA.EDU.EG

Title of Project: Autonomous  
Operation and Motion Humanoid  
Robot (ATOM) (part I)



Supervisor: Dr. Samer Ibrahim

## Abstract

Yousef Yousef Ahmed  
Yousef Elazhary  
teghost2010@rocketmail.com

In this project, an intelligent humanoid robot with a lower cost is introduced as the human body is well suited for acting in our everyday environments. Stairs, door handles, tools, and so on are designed to be used by humans. Applying the proposed system our robot will be able to learn how to balance, walk and grab things.

This part of the project has the target of designing and implementing the electrical and embedded system of that intelligent humanoid robot by constructing the needed sensory system with a suitable processing unit , on the other hand this part will contribute in building the lower body learning algorithm (DQN) that make the robot able to learn how to balance while walking. The lower body learning algorithm consists of two integrated blocks (Q-Learning & Neural Network) , so we in part 1 are focusing in the Q-learning algorithm while part 2 has the target to construct the neural network algorithm and integrate it with us beside constructing the convolution neural network algorithm for the upper body learning to make the robot able to detect the target object and also detect faces .



# I- Major: Electrical Systems Engineering (ESE)



Amr Abdelnaby Ahmed  
Sherif  
mealova@hotmail.com

Title of Project: Autonomous  
Operation and Motion Humanoid  
Robot (ATOM) (part 2)

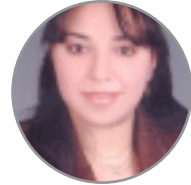
Supervisor: Dr. Samer Ibrahim

## Abstract

The notable growth in robotics science research and developments is simply a result for humans trying to catch up with the ever-changing busy life. Although the development rate is huge, majority of designed robots are direct programmed, limiting them to only a few programmed dedicated tasks with high cost. As the human body is fit to act well in a day-to-day environment like stairs, door handles, and tools which are already designed to be used by humans, an intelligent humanoid robot with a lower cost is proposed. By applying our system methods, the robot will be able to learn how to balance, detect its goal and walk towards it. This part of the project has the aim to build the neural network that will serve as the concrete in making the lower body of the robot able to learn how to balance while walking. This neural network will be integrated with Q-learning algorithm that part 1 will construct to complete the lower body learning algorithm which is Deep Q-Networks (DQN). Also, this part (part 2) has the target to build the upper body learning algorithm using Convolution Neural Network (CNN) that will take inputs from the camera to detect the goals in order to move towards them from one place to another. The proposed system is different from the applied ones in many aspects like: a) the under actuation concept that results in lower cost and power consumption. b) Using Deep Q-Learning algorithm which has not been used in humanoid robots except for one approach named Atlas which was model based while our system is model free. The main functions and algorithms of the proposed system will be achieved based on reinforcement learning (Deep Q-Networks) and convolution neural network which proved to be a working method in previous applied systems such as Atlas & Atari, while part 1 of the project will implement the sensory system based on Linux micro-computers (Raspberry Pi). By applying the proposed technique which is Deep Q-Networks, our humanoid robot will learn how to balance and walk by giving -ve rewards for the bad actions in order not to repeat doing them again and find the best possible actions making the robot able to humanly walk.



# I- Major: Electrical Systems Engineering (ESE)



Eriny Elkess Antonus  
Fekry Basta  
goodgirl.rery@hotmail.com

Title of Project: Design and  
Development of EUS1 Antennas

Supervisor: Dr. Ahmed Shaker



Mohamed Mahmoud  
Gamaleldin Mohamed  
moh-wll@hotmail.com

## Abstract

Design the antenna for first satellite for Egypt universities (EUS1); the first Egyptian experimental satellite operates for remote sensing done by universities in Egypt. The satellite has an image resolution of 8 meters which is satisfactory for many important civilian applications. The satellite can capture a vertical image for any location in Egypt once over 75 days. It also can be tilted to capture images for location at both sides of satellite path, within periods less than 16 days capture 3D images for location. The satellite payload includes an infrared camera and four spectrum optical cameras that used for various applications, also has a communication device for the store and forward transmissions and an Antenna as part of transmitting and receiving system that is designed to radiate or to receive electromagnetic wave. Designing antenna to meet the requirements of the satellite is the primary challenge. The assigned elements for the antenna are to be reasonable sized, light weight, robust, cheap, and reliable and having all the desired electromagnetic properties. Using CST and FEKO software to simulate and design an antenna to produce the desired requirements and to verify the simulation results, the antenna will get measured in an anechoic chamber.

# I- Major: Electrical Systems Engineering (ESE)



Ahmed Toson Fouad Toman  
ahmed.toson@msa.edu.eg

Title of Project: Smart Grain Storage Monitor and Control System

Supervisor: Dr.Said Mabrouk



Aya Mohamed Abdelmonsef Mohamed  
aya-mohamed9393@hotmail.com

## Abstract

Although we are living in an era of fast development in the technology of monitoring and controlling in the field of storage houses, Egypt still suffers from a huge scandals in this field especially in field of wheat that considered to be the main source of nourishment in Egypt that the poor people who represents the majority, depends on. From this point the proposed system suggested a new technique that never implemented before in Egypt to face the problems of huge costs that reaches up to billions of pounds, also the illegal addition of false quantities of wheat and the uncontrollable of the environment inside storage houses. The new technique depends on measuring the level of grains inside silos through an efficient level sensors and monitoring the environment through environmental sensors, all these parameters will be sent periodically to the main station via GSM module, and will be displayed automatically on the LCD. Through this device we tried to decrease the human interface and decrease any manipulation and fraud that is available in the current alternative systems.

The poster contains the following sections:

- Aims and Objectives:** The primary aim of this project is to:
  - 1) Monitoring and controlling of the temperature, humidity in the silos.
  - 2) Addressing the adding and removing of the grains.
  - 3) Monitor data content of the parameters of the environment inside silos.
- Background:** Discusses the importance of grain storage and the need for a smart monitoring system to prevent fraud and ensure accurate measurements.
- Methods:** Describes the use of sensors (temperature, humidity, level) and a GSM module for data transmission to a central station.
- Results:** Lists the system's capabilities, such as monitoring temperature and humidity, controlling grain levels, and displaying data on an LCD.
- Conclusions:** States that the system successfully monitors and controls the storage environment, reducing human intervention and fraud.
- References:** Lists academic sources related to grain storage and sensor technology.

The poster also features a block diagram of the system architecture and a flowchart of the grain storage monitor and control process.

# I- Major: Electrical Systems Engineering (ESE)



Hossam Hagag Ali Mohamed  
Hagag  
h.hagag.ali@gmail.com

Title of Project: Design and  
Development of EUS1 Antennas

Supervisor: Dr.Somaia Mohamed



Mahitab Yasser Yahia  
Abdelmoneam Aly  
mahitab94@gmail.com

## Abstract

Space technologies have evolved and developed by a lot of countries that is only developed by space agencies and technical engineers to create satellites. The main trend in development, test and operating satellite by student now is done through what is called cube satellite (CubeSat). CubeSat consists of several subsystems in order to function properly. Communications subsystem plays a significant rule in internal (communication between antenna and all subsystems) and external (communications between ground station and CubeSat) communication at CubeSat. Therefore, its needed to create specific communications subsystem to fit specification of CubeSat's mission. The main functions of the system are achieved based on selecting suitable components to fit specific requirement. In any satellite, the primary mission requirement is to establish a definitive link to send telemetry data from sensors and payload to ground control station (GCS) and to receive commands from GCS with minimum power consumption. The soul goal of this thesis is to present the hardware design and implementation of the communications subsystem with commercial of the shelf (COTS) components rather than using space grade components to reduce the cost and to test the subsystem before integration to fit Egy\_Univer\_Sat\_1 (EUS1) CubeSat.

# I- Major: Electrical Systems Engineering (ESE)



Ahmed Abdelkareem Ibrahim  
Okeel  
ahmedkareem808@gmail.com

Title of Project: Software  
design and implementation of  
communications subsystem of  
Egy\_Univer\_Sat1



Mohamed Ibrahim Hany  
Salem Ibrahim  
mido\_zoy@hotmail.com

Supervisor: Dr.Somaia Mohamed

## Abstract

Subsystems are being developed to satisfy dramatically increasing efficiency, reliability, cost, and functionality. Communication subsystem plays a significant rule in internal and external communication at CubeSat. It's needed to be designed to fit specification of CubeSat mission. Mission is testing a new space technology for National Authority for Remote Sensing and Space Sciences (NARSS). The main functions and algorithms of the proposed system are achieved based on establishing protocols for data exchange and controlling of communication subsystem, while the system is implemented based on microcontroller (MCU). Microcontroller is the brain of subsystem to manage any operation inside or outside subsystem and establishing of communication link. A primary mission requirement of any satellite is the ability to exchange information with a ground based command station, establishing a reliable link to send telemetry, health status from sensors and scientific payload data and being able to receive commands from Earth. After analysis for requirements and software target, the code will be implemented and tested with hardware integration of the designed board. The goal of this project is to design and implementation of the communication subsystem software to fit in the CubeSat Egy\_Univer\_Sat\_1.

# I- Major: Electrical Systems Engineering (ESE)



Yasser Sobhy Farag  
Abdelsalam  
yasser\_ahly@hotmail.com

Title of Project: Two Way Ultra  
Wide Band Compact Power Divider

Supervisor: Dr.Mahmoud Abdallah



Ahmed Mohamed Hussien  
Hassanin  
ahmedhussienvip@gmail.com

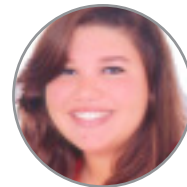
## Abstract

The splitting of electromagnetic signals is a fundamental signal processing functionality in electronics. Many circuits exist in the RF and microwave designer's toolbox to facilitate effective signal splitting and recombination. The proper choice of circuit depends on the application and requirements; however, many engineers become confused due to the multitude of options available. From this point, we decided to make a two-way power divider, which is relatively different of some alternating systems with many features.

In this report, we will discuss how to achieve a two-way power divider, which is more compact, and how it works in ultra-wide band to connect with application of wide band frequencies as well as trying to decrease the power loss in addition to improve the output performance and power division.

Furthermore, this report try to explain some methodologies to achieve with our project with this features. As we will explain later, we used metamaterial technique to decrease the size of the component. Also how to make a micro-strip slot-line. In addition to the technique of transferring by mutual induction.

# I- Major: Electrical Systems Engineering (ESE)



Hania Sherin Omar  
Abdelhamid Mohamed  
hania\_abdelhameed@hotmail.com

Title of Project: High Selective  
Compact Microwave Resonator


Supervisor: Dr.Mahmoud Abdallah




Omar Tarek Hussein  
Mohamed Ismail  
tarek9465@hotmail.com

## Abstract

This topology introduces an ultra-compact resonator, working for multiband response, compared with previously designed multiband resonators. This design will achieve the compact size and the multiband function by using the DCRLH-TL configuration along with meander line. The DCRLH-TL has proved to maintain sharpness better than the CRLH-TL and simplicity in its design. This structure will accomplish a high quality factor, along with a low insertion loss and return loss, and will work on multiple WLAN frequencies.



the UNIVERSITY of GREENWICH



MSA  
MEMBERSHIP SOCIETY OF AMERICA

Hania Sherin Omar AbdelHamid [135915]  
Omar Tarek Hussein [130647]  
Electrical Communication and Electronics  
Engineering 2016-2017

### High Selective Compact Microwave Resonator

**Aims and Objectives:**

- This topology introduces an ultra-compact resonator, working for multiband response.
- This design will achieve the compact size and the multiband function by using the DCRLH-TL configuration along with meander line.
- This structure will accomplish a high quality factor, along with a low insertion loss and return loss, and will work on multiple WLAN frequencies.

**Background:**

- The resonator is a system that oscillates at frequencies called resonant frequencies.
- Certain frequencies are selected from the signal by using the resonators.
- In the past years, people tried to innovate the usage of the resonators. But, the resources were limited and they cannot ensure that the results they obtained are the best of all.
- New applications in the microwave field are established in order to simulate our results and compare it with the measured ones which lead to more efficiency and accuracy especially in designing and manufacturing the resonators.
- Many researches have been made in the field of the resonators in order to achieve the high quality factor and making it a compact size.

**Results:**


- This design introduces quad-band for 7.3 GHz, 8.3 GHz, 11.9 GHz, and 13.8 GHz.
- Insertion losses of 2.2 dB, 0.27 dB, 2 dB, and 1.6 dB, respectively.
- The return losses are 12.2 dB, 36 dB, 20.5 dB, and 19.5 dB, respectively.
- The quality factor provides selectivity equals 42.33, 16.68, 15.07, and 31.1, at the four frequencies respectively.
- Additionally, the design achieves a compactness size of  $13.2 = 16.5 \text{ mm}^2 (0.548 = 0.6855 \text{ Ag}^2)$ .

**Conclusion:**

- A novel quad band resonator established with the same compactness size that of a dual band resonator constructed using D-CRLH TL.
- The micro-strip structure composed of D-CRLH as inter-digital capacitors and a meander line for resonance.

**References:**

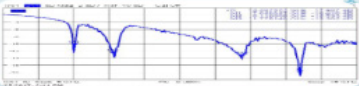
1. David M. Pozar, "Microwave Engineering", John Wiley & Sons, Inc. 2012.
2. A. R. M. Fakhri, "A Compact Resonator Based on Composite Dielectric Resonator Based On A Planar Meander Strip Resonator", IEEE APS, Middle East Conference on Science and Technology (MESCST), 2016.
3. H. Y. Shaker, H. Elshard and Amr Abdelreheem, "A Novel Ultra Compact Resonator for Bandwidth Tuning", IEEE Transactions on Microwave Theory and Tech, 2017.
4. Osama Tarek Hussein and Mahmoud Elmaghrabi, "Design of Low Phase Noise Oscillator Based on a Resonator Resonator Using Composite Right/Left-Handed Transmission Line", IEEE Microwave and Wireless Components Letters, Vol. No.1, January 2014.



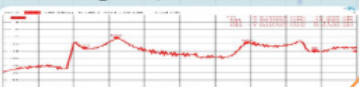
**Fig.1 Ultra Compact quad-band resonator based on novel D-CRLH**

**Methods:**

- This resonator will have an extremely compact size comparing with the previous resonator designs working on multiband configuration.
- The design will include a coupled gap resonator, along with meander line and the DCRLH configuration.
- With the combination of the D-CRLH cell, meander line, and coupled gap resonator, this will help obtain multiband resonator with an extremely compact size to fit in our consecutively updated technology.



**Fig.2 S11 Parameters**



**Fig.3 S21 Parameters**

# I- Major: Electrical Systems Engineering (ESE)




Donya Zakaria Mohamed  
Monib Nazif  
donya.zakaria@hotmail.com

Title of Project: Dual Notching of UWB antenna using electromagnetic band gap structures


Supervisor: Dr. Mahmoud Abdallah

## Abstract

In this project, an ultra-wideband (UWB) monopole antenna will be used which functions within the range of (3.1 GHz – 10.6 GHz) as approved by the Federal Communication Commission (FCC). A Dual notch nearby WiMAX frequencies range (3.5 GHz – 5.8 GHz) will interpolate within the UWB spectrum. Using electromagnetic band gap (EBG) cells coupled to the antenna feeding line will reduce the size of the antenna, high data rate, and high notching selectivity. The achieved results for the S-parameters should be below minus 10 dB for reflection coefficient over the spectrum and the rejection of two frequencies within the range of WiMAX for the dual notch. The use of two notched bands is to eliminate interference with wireless local area networks. The obtained results are simulated using full wave simulations.



UNIVERSITY OF GREENWICH



MSA  
M.Sc. in  
Electrical and Electronic Engineering

Donya Zakaria Nazif 153459  
Electrical Communication and Electronics Systems 2016-17

### Dual Notching of UWB Antenna using Electromagnetic Band Gap Structures

**Aims and Objectives:-**  
The primary aim of this project is to:

- design, simulate, and implement of UWB antenna with EBG structures.
- rejecting the nearby WiMAX frequencies using electromagnetic band gap structures.
- The EBG structures have to reduce the size of the antenna.
- The antenna must be in a compact size, resonates gain, and high interference notching selectivity.

**Background:-**

- Ultra-wideband (UWB) technology is an innovation in the frequency band ranging from 3.1 GHz to 10.6 GHz by the Federal Communication Commission (FCC) in 2002. This technology has high data rates due to short pulses of UWB.
- The electromagnetic band gap structure, that has characteristics similar to photonic crystals, is usually designed to prevent signal to propagate through them. The technology band gaps are located along the structure band. In order to remove the unwanted band, the EBG structure which covers a partial surface and an edge structure will be used.
- The notch is capable WiMAX frequencies range (3.5 GHz – 5.8 GHz). The band-notched characteristic is investigated using two EBG structures along with split in them in opposite side.

**Results:-**

- The design of dual notch UWB monopole antenna is displayed in Figure 1 (a). The EBG unit cell geometry and EBG equivalent circuit are displayed in Figure 1 (b).
- The simulated and measured transmission coefficient of UWB monopole antenna with single notch is displayed in Figure 2.
- The UWB antenna with dual notch is designed. It can cover the spectrum with 3.1 and 10.6 GHz frequency transmission for dual notch.
- The simulated dual notch UWB monopole antenna is displayed in Figure 3.

**Conclusions:-**

- The EBG structure is used for WiMAX interference immunity in UWB single, dual and triple antenna.
- The UWB antenna is functioning from 3.1 GHz to 10.6 GHz with 3.5, 5.2 and 5.8 GHz rejection.
- The usage of EBG helps to reduce the size of the antenna.
- Also, it helps to have transmission gain and high interference notching selectivity.
- The single element design is implemented using full wave simulations.

**References:-**

[1] J. Yang, H. Luo, and Y. Yin, "Characterized of UWB Antenna with Dual Band-Notched Structure," *International Journal of Technology Letters*, vol. 08, no. 01, pp. 201-208, 2016.

[2] M. S. Ghannouchy, B. Beker, and M. Ghannouchy, "Compact Planar Microstrip Antennas for Ultra-Wideband Applications with Dual Band-Notched Characteristics," *International Journal of Applied Microwave and Optical Technology Letters*, vol. 06, no. 11, pp. 2008-2009, 2012.




Fig. 1 (a) Top view of dual notch UWB monopole antenna (b) The EBG unit cell geometry (c) The EBG equivalent circuit

**Methods:-**

- The methodology used is to design a dual notch with Electromagnetic Band Gap Filter for the rejection frequency in the band range.
- Testing of the simulation will be performed using CST software. Thus, the UWB antenna will be fabricated and integrated into the network analyzer and antenna structure. Afterward, the measured results will be compared against the simulation.

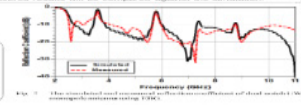


Fig. 2 The simulated and measured transmission coefficient of dual notch UWB monopole antenna using CST




Fig. 3 The fabricated dual notch UWB antenna

# I- Major: Electrical Systems Engineering (ESE)



Kirolos Bassem Amin  
Hagrah  
kirobassem@hotmail.com

Title of Project: Flexible antenna  
for wearable applications

Supervisor: Dr.Mahmoud Abdallah

## Abstract

The fast improvement of the wearable specialized gadgets area conjures the requirement for superior, vigorous and adaptable radio antennas. The reception apparatus necessities for body worn gadgets are very unique contrasted and the ones for their traditional partners. Contingent upon the application, the reception apparatus should be little in size and equipped for giving adequate transmission capacity to correspondence.

Its radiation example pattern to be guided outwards from the clients' body to keep away from dielectric coupling and guarantee insignificant absorption by the body. Besides, since the used substrates are typically adaptable and more muddled to fabricate, the radio antenna typologies must be kept as straightforward as would be possible.

In this report we discuss a patch antenna which is made from flexible materials. This would allow it to be flexible and bendable to fit the application needed.

With the broad utilization of remote gadgets inside or at nearness to the human body, electromagnetic impacts brought on by the collaboration between RF waves and human tissues should be considered with foremost significance.

The parameters of the antenna will vary depending on the application needed or the purpose



# I- Major: Electrical Systems Engineering (ESE)




Donya Zakaria Mohamed  
Monib Nazif  
donya.zakaria@hotmail.com

Title of Project: Dual Notching of UWB antenna using electromagnetic band gap structures


Supervisor: Dr. Mahmoud Abdallah

## Abstract

In this project, an ultra-wideband (UWB) monopole antenna will be used which functions within the range of (3.1 GHz – 10.6 GHz) as approved by the Federal Communication Commission (FCC). A Dual notch nearby WiMAX frequencies range (3.5 GHz – 5.8 GHz) will interpolate within the UWB spectrum. Using electromagnetic band gap (EBG) cells coupled to the antenna feeding line will reduce the size of the antenna, high data rate, and high notching selectivity. The achieved results for the S-parameters should be below minus 10 dB for reflection coefficient over the spectrum and the rejection of two frequencies within the range of WiMAX for the dual notch. The use of two notched bands is to eliminate interference with wireless local area networks. The obtained results are simulated using full wave simulations.



UNIVERSITY OF GREENWICH



MSA  
MEMBERSHIP SOCIETY OF ACADEMICS

Donya Zakaria Nazif 153459  
Electrical Communication and Electronics Systems 2016-17

### Dual Notching of UWB Antenna using Electromagnetic Band Gap Structures

**Aims and Objectives:-**

The primary aim of this project is to:

- design, simulate, and implement of UWB antenna with EBG structures.
- rejecting the nearby WiMAX frequencies using electromagnetic band gap structures.
- The EBG structures have to reduce the size of the antenna.
- The antenna must be in a compact size, resonates gain, and high interference notching selectivity.

**Background:-**

- Ultra-wideband (UWB) technology is an innovation in the frequency band ranging from 3.1 GHz to 10.6 GHz by the Federal Communication Commission (FCC) in 2002. This technology can reach data rates close to other antennas of UWB.
- The electromagnetic band gap structure, that has characteristics like photonic crystals, is usually designed to prevent signal to propagate through them. The technology band gaps are located along the structure feed line to ensure the unwanted band rejection. The EBG structures which covers a dual notch and are edge-coupled via a microstrip feed line.
- The notch is capable WiMAX frequencies namely (3.5 GHz – 5.8 GHz). The band-notched characteristics is investigated using two finite structure slab with split in them in opposite side.

**Results:-**

- The input of dual notch UWB monopole antenna is displayed in Figure 1 (a). The EBG unit cell geometry and EBG equivalent circuit are displayed in the schematic and equivalent circuit in Figure 1 (b).
- The simulated and measured transmission coefficient of UWB monopole antenna with single notch is displayed in Figure 2.
- The UWB antenna with dual notch is designed. It can cover the spectrum with 3.5 and 5.8 GHz rejection frequencies for dual notch.
- The simulated dual notch UWB monopole antenna is displayed in Figure 3.

**Conclusions:-**

- The EBG structure is used for WiMAX interference immunity in UWB single, dual and triple antenna.
- The UWB antenna is functioning from 3.1 GHz to 10.6 GHz with 3.5, 5.2 and 5.8 GHz rejection.
- The usage of EBG helps to reduce the size of the antenna.
- Also, it helps to have transmission gain and high interference notching selectivity.
- The single element design is implemented using full wave simulations.

**References:-**

[1] J. S. Kang, H. S. Lee, and Y. Y. Yoo, "Characterization of UWB Antenna with Dual Band-Notched Frequency Bandwidth," *International Journal of Microwave and Millimeter Wave Technology Letters*, vol. 10, no. 11, pp. 201-205, 2019.

[2] M. S. Ghannouchy, "UWB Antenna with Dual Band-Notched Characteristics," *International Journal of Microwave and Millimeter Wave Technology Letters*, vol. 10, no. 11, pp. 206-210, 2019.

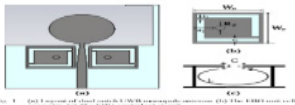


Fig. 1 (a) Top view of dual notch UWB monopole antenna (b) The EBG unit cell geometry (c) The EBG equivalent circuit

**Methods:-**

- The methodology used to design a dual notch with Electromagnetic Band Gap Filter for the rejection frequency in the band range.
- Testing of the simulation will be performed using CST software. Thus, the UWB antenna will be fabricated and integrated into the network analyzer and antenna structure. Afterward, the measured results will be compared against the simulation.

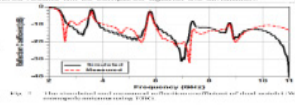


Fig. 2 The simulated and measured transmission coefficient of dual notch UWB antenna notching EBG




Fig. 3 The fabricated dual notch UWB antenna

# I- Major: Electrical Systems Engineering (ESE)




Raneem Samy Abdelwahab  
Rabie  
raneemsamy109@yahoo.com

Title of Project: Mutual Coupling Reduction between MIMO antennas system using electromagnetic band gap structure


Supervisor: Dr.Mahmoud Abdallah

## Abstract

This thesis deals with the design and analysis of antenna structures for WLAN operating in the wireless frequency bands. It is desired to design a compact multiband antenna with MIMO capabilities and high isolation between antenna elements. For this reason, Electromagnetic Band Gap (EBG) has been proposed and can be applied to the antenna with NxN MIMO. A 3D-EBG structure can be designed and applied to the antenna ground plane for surface wave suppression and improved isolation between antenna elements.



UNIVERSITY OF GREENWICH



MSA  
MSc in Systems and  
Software Engineering

Student: Raneem Samy Rabie ID- 133847  
BSc Communications Engineering 2016-017

### Mutual Coupling Reduction between MIMO Antennas Systems Using Electromagnetic Band Gap Structure

**Aims and Objectives:-**

- Design and implementation of the MIMO antenna with
  - Compact size
  - High gain
  - Good isolation between MIMO antennas

**Methods:-**

- Design of two antennas operated at 5 GHz.
- The antenna is designed on FR-4 material
- EBG is introduced to reduce mutual coupling

**Structure:-**

- The EBG structure is chosen as:
  - Substrate FR-4 dielectric structure.
  - Wide band gap.
  - Conductivity of 0.001 S/m.
  - Each cell connected to the ground.

**Background:-**

- The digital era has led to two parallel communication technologies in the smart phone market especially during the past decade. Mutual coupling between two antennas and high capacity networks are becoming more challenging by the day.
- Properly designed antennas in the handset are needed more than ever now, as a more volume Long Term Evolution (LTE) networks are being deployed in several countries.
- Multiple Input Multiple Output (MIMO) antennas have been shown to increase the spectral capacity by utilizing multi-path signals and being able to deliver simultaneous signals.
- Closely spaced antennas in the handset market have become an ever increasing challenge due to mutual coupling between antenna elements.

**Conclusions:-**

- Due to the rapid growth of the communication systems, we should design the new communication systems with novel antennas with characteristics of new systems.
- MIMO is an active research area so, the main challenge in this project is to design new MIMO antenna to improve WLAN links.

**References:-**

- J. Ramezani, "Compact MIMO Antenna", *Miniaturized and Compact Technology Letters*, vol. 58, no. 6, pp. 1708-1709, 2016.
- A. A. Hashim and M. A. Shabbir, "MIMO Antenna with Bandpass Characteristics", *IEEE Int. J. of Electronics and Communications*, vol. 70, no. 7, pp. 1338-1341, 2016.




Fig. 1 Model of MIMO antenna EBG

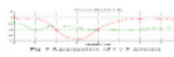


Fig. 2 Radiation pattern of 2x2 antenna

Parameter	W	L	L <sub>in</sub>	L <sub>out</sub>	W <sub>in</sub>	W <sub>out</sub>	L <sub>v</sub>	L <sub>h</sub>	J
Dimension (mm)	9	9	9	10	21	1.0	20	9	




Fig. 3 Structure of antenna

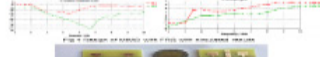


Fig. 4 Radiation and isolation of EBG structure of antenna without and with EBG

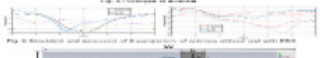


Fig. 5 The Mutual of MIMO antenna with EBG with wide bandwidth structure




Fig. 6 The radiation pattern of the antenna with EBG

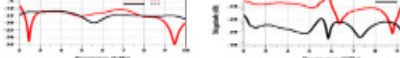


Fig. 7 The mutual coupling between antennas on the substrate with EBG with wide bandwidth structure

# I- Major: Electrical Systems Engineering (ESE)



Yasmin Tarek Mahmoud  
Hammad  
yasmintarekhammad@gmail.com

Title of Project: An Integerated  
LPF and BPF for High Selective  
Filtering

Supervisor: Dr.Mahmoud Abdallah



Zeinab Kamal Mohamed  
Fouda  
zeekamalfouda@gmail.com

## Abstract

Wireless microwave communication systems demand high-performance compact band pass filters with low insertion loss and high selectivity along with flat group delay in the passband. The main issue in microwave filter design is the tradeoff between high selectivity and compactness.

Finding a realization of the proposed filter that satisfies each of the requirements-of which some are contradictory- to a sufficient degree to allow minimum signal degradation and efficient use of frequency, is the main objective of this project. The proposed planar filter is designed by employing an integration of a band pass filter (BPF) and a low pass filter (LPF) using microstrip technology to improve the roll-off factor and consequently the selectivity.

Unlike some current systems that use the defected ground approach to guarantee the miniaturization of the filter, the proposed filter should be uniplanar which allows the minimization of power loss. Therefore, the proposed filter should be power-efficient, compact, and highly selective, which are all sought-after features in the field of wireless communications.

# I- Major: Electrical Systems Engineering (ESE)



Raneem Samy Abdelwahab  
Ra Moemen Amr  
mo2men.el.zeiny@gmail.com

Title of Project: Riot Control  
Monitoring & Support System (RCMS)

Supervisor: Dr.Sherif Kamel

## Abstract

Riot control sector play a difficult role in every nation's internal affairs, however, in the past decade many challenges has been facing this sector internationally and a nationally as well, resulting into some problems that have been identified. The Egyptian Central Security Forces are the main department that runs the riot control sector, it is noted that they do not utilize any form of modernized framework to monitor, track and manage they operations which causes many of the problems identified for example the inaccuracy and inefficacy of commands due to lack of data. A Riot Control Monitoring and Support System is proposed as a multi-functional management solution that aims to provide seamless operation command and increases the operational capabilities of the maneuver units from battalion to platform/single conscripts level. The design of this system was divided into three layers, Embedded systems layer which is represented by the in-field wearable and stationary devices that provide geospatial and physiological data to the system, Server-Side layer which communicates with the embedded systems layer, also is responsible for storing, structuring and feeding the entire system with the required data and Client-Side layer that enables the user to display visualized data, control and manage the entire system. The main and most important achieved objective of this system is to reduce the casualties in operations on both parties.

# II- Major: Industrial Systems Engineering (ISE)



Shrouk Ibrahim  
AbdelFatah Ahmed  
anaroro\_1992@yahoo.com



Title of Project: Improvement of  
Warehousing and Storage in a Logistics Company.

Supervisor: Dr.Nahed Sobhi,  
Dr.Sameh Ahmed Salah

Jasem M S A D S  
Alarear  
jasem\_alarear@hotmail.com

## Abstract

The objective of this project is to improve the function of warehousing and storage in a cold Logistics Company. The study focuses on improving the internal storing layout inside cold rooms to overcome the problem of deep pallets, improve the docks performance and decrease the required service time per carrier. New different layouts were implemented inside the cold room and compared with the current layout.

Data was collected about the arrival and service rates for the current state and the different implemented layouts, and then analyzed using Arena Simulation. All layouts were scored in order to decide the best of them to be the permanent storing layout. Cost analysis was used to measure the effectiveness of the proposed solution

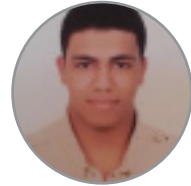


# II- Major: Industrial Systems Engineering (ISE)



Hebatalla Mostafa  
Abdelrashid Fahmy  
boobamostafa@yahoo.com

Title of Project: Productivity Improvement by Using Single Minute Exchange of Die (SMED) Methodology and Waste Elimination in a Food Factory



Supervisor: Dr. Nahed Sobhi,  
Dr. Sameh Ahmed Salah

Omar Mohamed Elmetwaly  
Ramadan Elmenshawy  
omarmensh95@gmail.com

## Abstract

Lean is a powerful tool, which can bring significant benefit to manufacturing industries by creating value through reduction of waste. Although the lean concept has become very popular in mass production industries such as the automotive industry, more recently the concept has been adopted in different batch processing industries and service sectors. The application of lean tools into the food processing industry has not received the same level of attention compared to the traditional manufacturing industries.

This project focuses on how a food industry company will be able to reduce changeover time by using Single Minute Exchange of Die (SMED methodology). The objectives of this research are to identify the factors that influence the high setup time and to highlight the actions that can be minimized to reduce the setup time. The productivity of the line will be evaluated by looking at the new Overall Equipment Effectiveness (OEE) indicator to prove the effectiveness of SMED. Moreover, in this work, Lean Six Sigma DMAIC Philosophy and problem solving methods are used to identify the root cause of wastes that found in a bakery line. The results of this project have led to reduce the changeover time by 25%, decrease the amount of waste by 50% and increase the OEE in the croissant line from 48% to 70% and in the bakery line from 65% to 75%. Also, the sales opportunities increased by 6,327,000 EGP/year.

# II- Major: Industrial Systems Engineering (ISE)



Abdelrahman Aly Hassan  
Elsharazly  
abdelrhmanelsharazly@gmail.com

Title of Project: Efficiency  
Improvement of a Production Line in a  
Powder Coating Factory.

Supervisor: Dr.Nahed Sobhi,  
Dr.Sameh Ahmed Salah

## Abstract

This study aims to evaluate, analyze and improve the existing operations and processes at a powder coating factory, the goal is to efficiently improve these operations and processes by obtaining maximum productivity and reaching the minimum amount of material losses.

The study focuses on the last phase of the production line that is responsible for grinding the material and packaging, the current operations and processes in this stage were analyzed using various techniques which were used to assess the current deviation from the target. The results of the problem analysis showed that the losses in this station consist of two primary causes, wearing of the single rotary valve and filling accuracy in the packaging process.

The study recommends the replacement of the valve as well as developing an automation system for the packaging process. The recommended solutions were implemented and the efficiency improvement was validated through various statistical tests.

# III- Major: Architecture



Mirna Adel Khalifa

Title of Project: RECYCLING HUB

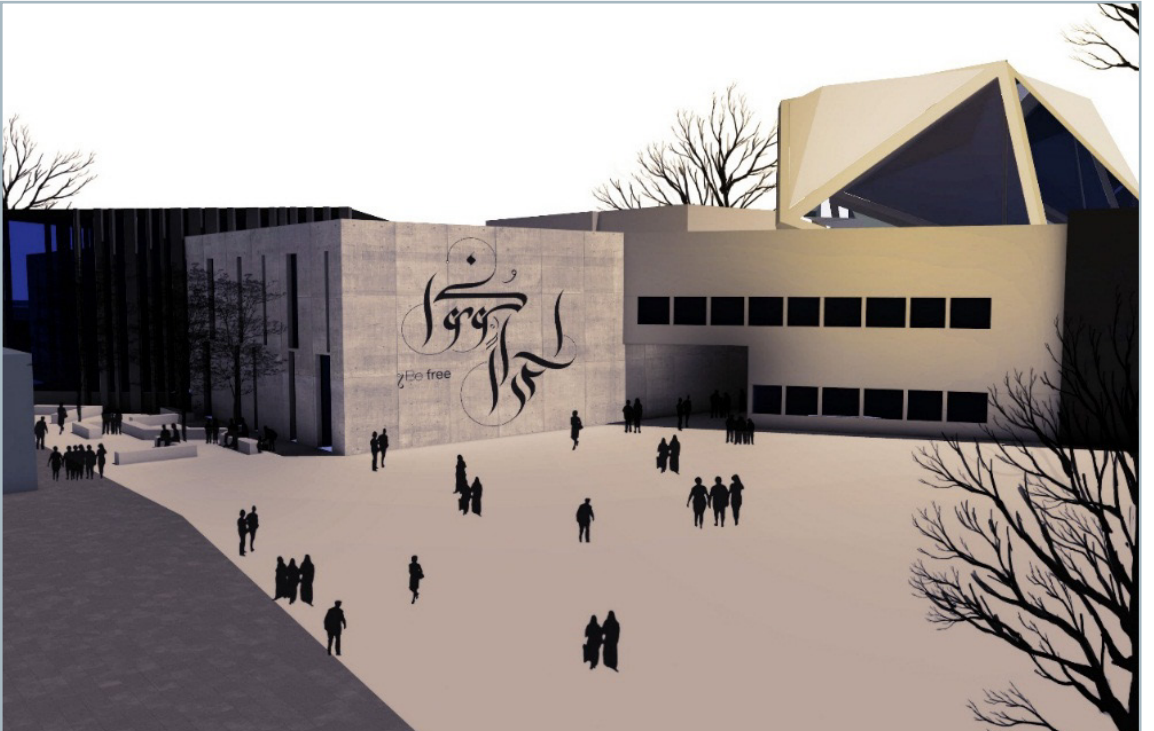
## Abstract

Constructing a Recycling Hub in a rich context such as Wekalet El-Balah, knowing that Wekala is already familiar with the recycling intervention (iron smithing and car spare parts), hence the aim of creating a Zero-Waste community, reaching for "Idealism".

The Project has 2 approaches; Recycling fabrics and Reusing metal waste leftovers from surrounding workshops. The project aims that the area of Wekalet El-Balah reaches whole development on commercial and industrial aspects, and helps spread awareness among locals.







# III- Major: Architecture



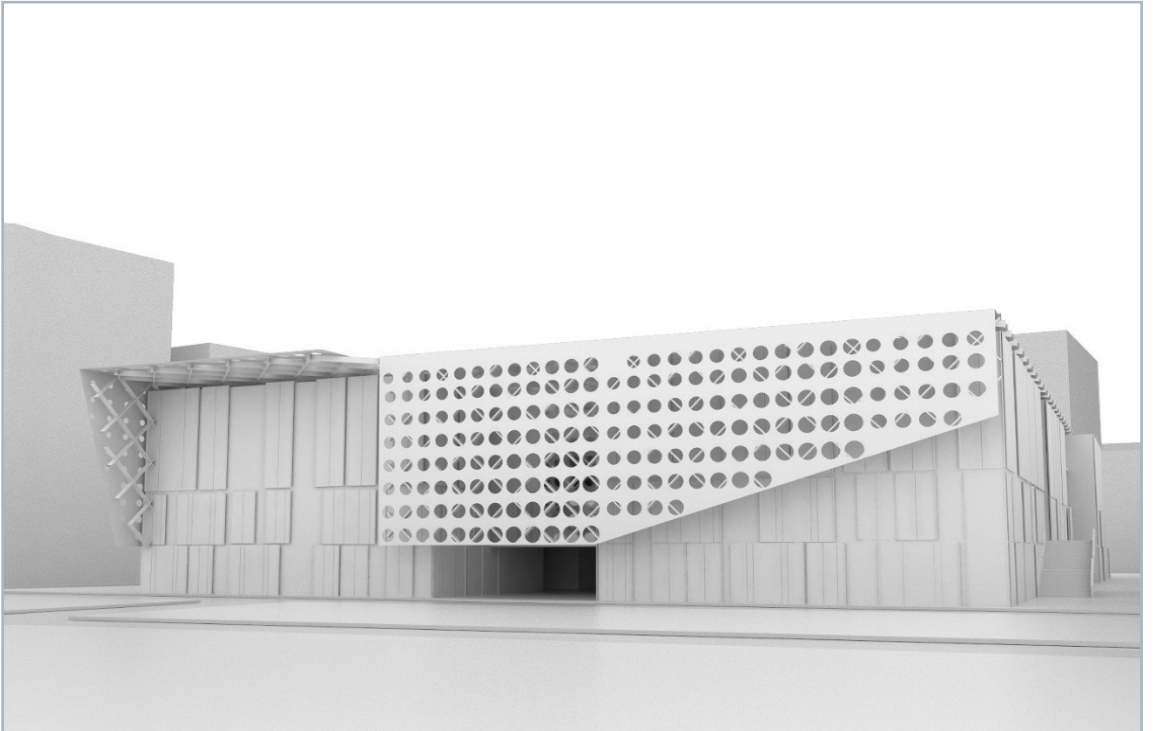
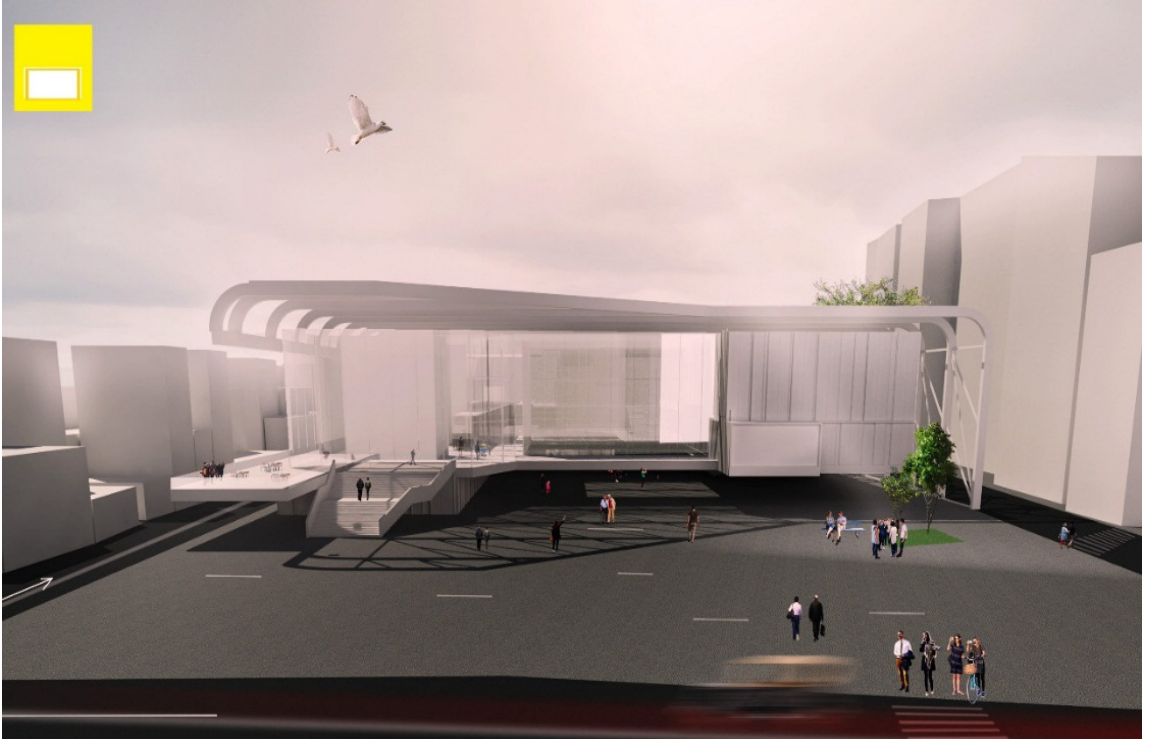
Mohamed AbdelAziz Wahid

Title of Project: VOCATIONAL SCHOOL

## Abstract

The architecture identification and subjectivity aims to increase the subject's ability of cognition and learning, which could not happen without a design proposal aim to design flexible learning pods which can be installed within the frame of educational space making it forever updated to needs that might happen through the typical school week or even a long time period, So, in state of being controlled by institutional standardization, students could promote to change their learning environments, taking advantage of flexibility that comes with new ductile building materials which can be removed, change and rebuild in another location serving another kind of activity.

The typical design concept of classes based on rooms while the design proposal define new way in educational learning which is class spaces , spaces are more open and designed to accommodate more than one activity , it's allow to active new principles of education which are communication, collaboration , creativity and critical thinking , and to define these principles the design proposed an open learning strategy which student can learn in different spaces while the filing of one space are still work



# III- Major: Architecture



Mohamed Wafik Ezzo

Title of Project: WASTE MANAGEMENT

## Abstract

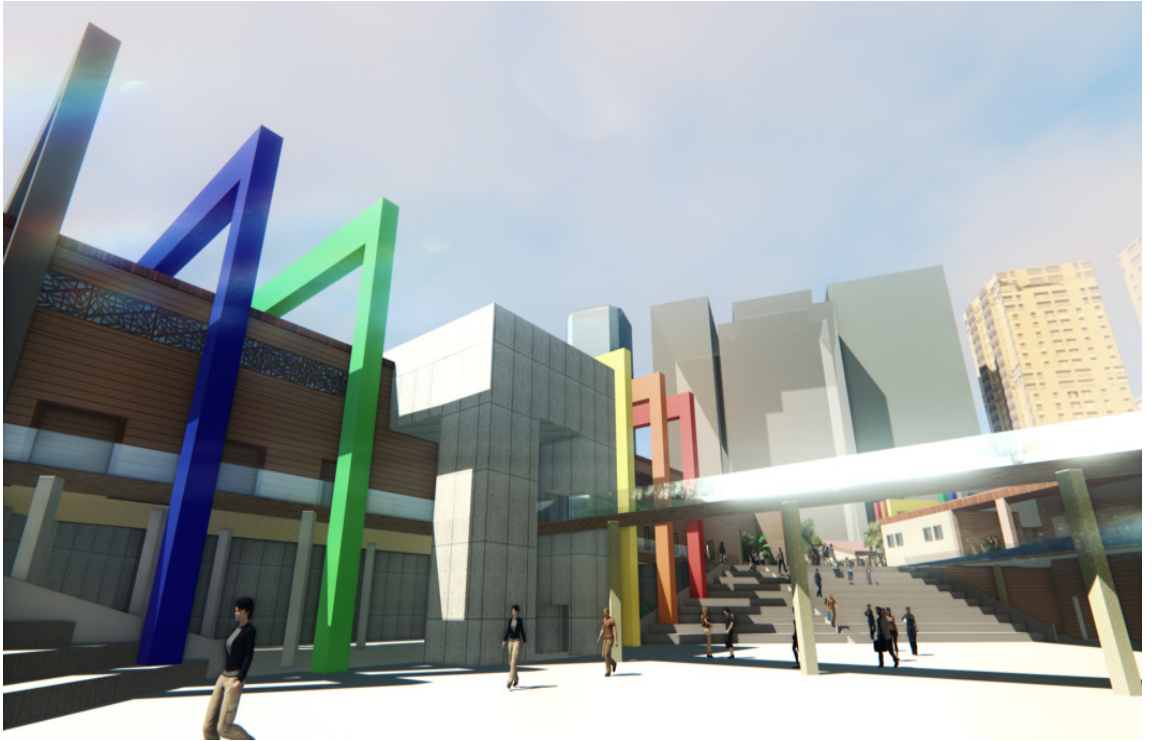
The “Waste Management Platform” will be the place that sells the idea not the product.

It is a platform that connects all the stakeholders of waste management in Egypt together; recycling companies, investors, startups, researchers, business owners, students and even normal people, to raise awareness about waste management in Egypt, challenges facing us, and moreover the great opportunities behind those challenges.

Wastes in Egypt are wasted resources, a treasure with no value! The difference between peoples who know that this is a treasure and who don't is “Knowledge”.

So in the Egyptian economic status now, “The Waste Management Platform” is exactly what we need, a place that spreads knowledge about this forgotten field, and reveals this treasure to everyone.





# III- Major: Architecture



Youmna Ahmed Fouly

Title of Project: WUNDERGROUND ARTS HUB

## Abstract

Based on the urban studies of the Downtown and the observed list of Problems, it was clear that, one of the main Problems that Downtown suffers from is the degraded social behavior and the gradual decrease in people's awareness towards the Downtown Heritage & Value. So, the proposed theme for the project was an Underground Arts Hub which will act as a vital tool to regulate and enhance the social behavior in this special area through arts.

The main concept of the project was MORPHOGENESIS which is "The Ability of Living Organisms to develop their Form & Shape "... Taking morphogenesis in the design language to create an urban & architectural developing tool in:

Underground Arts: Increasing the influence of these kinds of Arts on the Community and be more familiar with people

Downtown: Upgrading Community understanding through developing simple new ideas

