Faculty of Engineering

Graduation Projects

Mapping with SDGs

Year 2018-2019

Electrical Communications and Electronics Department (ECE)

Graduation Projects of the Academic year 2018-2019

No		
		
1	**Project Title**	**Waste management system**
	Students' Name	Mohamed Kamal Ahmed
	Supervised by	Dr. Fathi Zaki
	Abstract	Worldwide interest in Smart Cities has aggrandized, fostered by the need to find effective remedies to the major challenges foreseen for the next years. As one of the application of Smart City, Waste Management in a city is a formidable challenge faced by the public administrations. Waste is defined as any material in which something valuable is not being used or is not usable and represents no economic value to its owner, the waste generator. Depending on the physical state of the waste, they are categorized as solid waste and wet waste. With rapid increase in population, the issues related to sanitation with respect to garbage management are degrading immensely. It creates unhygienic conditions for the citizens in the nearby surrounding, leading to the spread of infectious diseases and illness. To avoid this problem, IoT based "Smart Waste Management" is the best and trending solution. In the proposed system, public dustbins will be provided with embedded device which helps in real time monitoring of level of garbage in garbage bins. The data regarding the garbage levels will be used to provide optimized route for garbage collecting vans, which will reduce cost associated with fuel. The analysis of ceaseless data gathered will help municipality and government authorities to improve plans related to smart waste management with the help of various system generated reports. The main idea is to build a low cost module that communicate over IoT platform to determine the garbage level and situation inside the waste bin. The microcontroller will be connected to ultrasonic sensor to determine the level of the garbage inside the bin, and the Passive Infrared sensor will be used to determine the presence of garbage thrower and garbage collector to open the door of the garbage, and finally the gas sensor will be used to determine the gases inside the bin and the smoke in case of fire.

Graduation Projects of the Academic year 2018-2019

No		
		
2	**Project Title**	**Embedded Based Vehicle Speed Control System Using Wireless Technology**
	Students' Name	Omar Ashraf Sharawy Sayed Soliman Khaled shaaban farrag ali
	Supervised by	Dr. Fathi Zaki
	Abstract	This project aims at automatically controlling vehicles at speed restricted areas such as schools, hospital zones etc. Nowadays the drivers drive vehicles at high speed even in speed limited areas without considering the safety of the public, the traffic police are not able to control them with full effect. Also it is not practical to monitor these areas throughout. This project paves way for controlling the speed of the vehicles within certain limit in restricted zones without interruption of the drivers. An Radio Frequency is used for this purpose. The RFID receiver is attached along with the vehicle and the RFID transmitter with these zones. These transmitters are programmed to send a coded signal when the receiver comes in proximity. Whenever the vehicles enter into these zones their receivers will receive this code and the speed of the vehicles is controlled automatically with the help of the Arduino unit present inside the vehicle. The transmitters are placed at the beginning and the end of the regions for which the speed should be reduced.

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No		
		
3	**Project Title**	**Car Black Box**
	Students' Name	Eman Mohamed
	Supervised by	Dr. Fathi Zaki
	Abstract	According to the World Health Organization (WHO), more than a million people in the world die each year because of transportation-related accidents. Now, a day's many accidents are happening because of the alcohol consumption of the driver or person. Hence drunk driving is a major reason of accidents in almost all countries all over the world. The main purpose of this project is to develop a prototype of the Accident detection system using black box. In the event of accident, if any injury happened to the car driver or passengers so maybe there will be loss of lives due to delay in medical help. This prototype can be designed with minimum number of circuits. The Car Black Box can contribute to constructing safer vehicles, improving the treatment of crash victims, helping insurance companies with their vehicle crash investigations and enhancing road status in order to decrease the death rate. This project aim at finding the occurrence of any accident using GPS and reporting the location to IoT server of accident and sending GSM messages to the previously coded number so that immediate help can be provided by ambulance or the relative erned. Also Range Finder is used to avoid accident with the ahead obstacles, as well as heart beat sensor is used to alert the driver to pull off if he have any situation to avoid accident in many scenarios. Finally Alcohol Sensor is used to stop the car if the driver is drunk.

No		
4	**Project Title**	**A reflector Based High Gain Thin Antennas for Wearable Application**
	Students' Name	Sara Sayed Abd Alwahab
	Supervised by	Dr. Mahmoud Abdallah
	Abstract	Currently, the emergence of wearable communication systems has boosted the interest in wearable antennas. Various applications in military, medical, emergency response, and consumer electronics applications have been seen to embed conventional cables, miniaturized electronic components, and connectors altogether in a wearable smart clothing system. The smart clothing electronic system should incorporate wireless communication components made of flexible textile rather than bulky boxes made from rigid materials. This has triggered the need for a flexible and wearable radiating system to suit this purpose, enabling a transparent or 'non-existent' system to the users. Thin Antennas are usually small gain antennas. The wearable antennas needs thin antennas which there are a continuous need for increasing its gain.

No		
5	**Project Title**	**Modified composite right/left handed transmission line for new performance antennas**
	Students' Name	Toka Medhat Mohamed monir ghaly
	Supervised by	Dr. Mahmoud Abdallah
	Abstract	CRLH circuit is represent the most general MTM structure possible. It also open a novel class of applications and devices such as: zeroth-order resonator antennas, beam width antennas and tunable radiation angle and backward-wave directional coupler. CRLH-TL is a combination between the two equivalent circuits for RH-TL and LH-TL LH or CRLH homogeneous TLs is not possible so we use techniques. The projects aims are to apply a simple design, small in size and to instruct devices apply the dual frequency response for any two frequency ratio with large efficiency and gain.

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No		
6	**Project Title**	**An Ultra-thin Flexible Dual-Band Antenna**
	Students' Name	Abdelaziz atef aboelabas
	Supervised by	Dr. Mahmoud Abdallah
	Abstract	Mobile communication systems have evolved at a quick pace during the last period, where antenna is a vital component in such systems. Nowadays, several ones operate at a number of frequency bands; such as, Wireless Local Area Network (WLAN) bands (2.4-2.5 GHz and 5.1-5.8 GHz). Traditionally, a single antenna cannot operate at all these frequency bands at once; hence, the need of multi-band antennas. There are a number of techniques for obtaining multiband resonances. For instance, loading the patch with slots, which introduces another band in the same structure. This thesis deals with the design and analysis of antenna structures for dual band operating in the wireless frequency bands. It is desired to design a compact ultra-thin antenna with its flexibility.

No		
7	**Project Title**	**A circular Polarized Antenna for Biomedical Application**
	Students' Name	Abdelrahman Mohamed Ahmed Abdelwahab
	Supervised by	Dr. Mahmoud Abdallah
	Abstract	The circular polarized antenna is one of the most important antennas that play an important role, since the cp antenna's features are included in biomedical application to transmit and receive the data with low errors. The circular polarization has features that helped to enhance the antenna in a certain parameter that indicate the circular polarization is well achieved. The electromagnetic waves that radiates from antenna has negative side effect in human health, therefore the circular polarized antenna is required to be safe, low profile size and efficient, so there is some applied techniques like adding slit and stubs, adding parasitic strip, and use ground plane structure.

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No		
8	**Project Title**	**Bandpass microwave filter based on dual behavior resonator principle using composite right left handed transmission line**
	Students' Name	Peter Atef Fawzey Ghaly
	Supervised by	Dr. Ahmed Fawzy
	Abstract	Currently, there is strong and increasing interest from industry for a single transceiver system to cover multiple frequency bands such as Wireless bands, and mobile cellular systems. As one of the most important front-end components, multi-band band-pass filters (BPFs) with compact size, planar configuration, and good performance have been investigated aggressively and substantial progress has been achieved. Design and implement compact filter depend on the dual behavior of resonator with Metamaterial enhancement to be used for multi band wireless application. The dual composite right left handed unit cell will improve the compactness and introduces multi-band configuration. I am working on Band Pass filter to be used in Wi-Fi, WiMAX, and LTE applications

No		
9	**Project Title**	**Compact microwave phase shifter based on metamateria**
	Students' Name	Mahmoud Mohsen Ebrahim Egela
	Supervised by	Dr. Ahmed Fawzy
	Abstract	A phase shifter is a two-port device that gives changes in the phase of the incoming signal with approximately a trivial amount of attenuation. Phase shifters are essential in microwave communication systems. Phase shifters applications are almost in all communication systems including mobile phone, smart antennas in base stations and wireless LAN. Although phase shifters are fundamentally used for electronic beam steering in phased array antenna systems. There are several methods for designing phase shifter. A phase shifter should have stable phase shift in a wide frequency, small size and low losses. These can be achieved by using metamaterial (MTM) transmission line. In this thesis one of the characteristics of the proposed phase shifter is to have linear phase shift at wide band. The loaded-line phase shifter is selected since it can have a broad range of phase shifts and the phase shifts are not confined to set values. The loaded-line phase shifter is a quarter-wavelength transmission line with shunt reactances at each end. The quarter-wavelength transmission line will be a composite right/left-handed (CRLH) transmission line. CRLH-TL will achieve the compactness of the phase shifter.

No		
		
10	**Project Title**	**Smart Coat with a Fully-Embedded Textile Antenna for IoT Applications**
	Students' Name	Fayrouz Hossam abdelwahab Mariam Monier ragheb
	Supervised by	Dr. Mohamed Ismail
	Abstract	Early and accurate detection with effective treatment of breast cancer is an essential part to reduce morbidity and mortability for this common disease. Many techniques are recommended for screening such as Mammography, Sonography which proved that they were not with highly accurate and effective images, especially for patients with dense beast tissue, they are also did not provide continuous monitoring. In addition, they can cause cancer to spread in some high-risk women due .to their exposure to radiation. Thermography shows great progress for detection of breast cancer over the past 3 decades. Therefore, IR thermography method to detect breast cancer with the help of technology such as neural networks for better prediction consider to be a reliable tool to diagnose breast cancer with high accuracy So, this project represents "A wearable flexible device for breast cancer detection and prediction" that aims for continuous home monitoring without a doctor. Which can be used easily and continuously.

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No		
		
11	**Project Title**	**Portable Mobile & WiFi Jamming system**
	Students' Name	Marwan Ashraf Abd elFatah
	Supervised by	Dr. Mohamed Ismail
	Abstract	In mosques, churches or exam halls, a signal jamming system is required for achieving absolute silence. Not to be interfered or disturbed by any sounds from a cell phone or any electronic device is necessary for such meaningful situations. In this report, there is an introduction for a specific jamming system that blocks out cellular and Wi-Fi signals aimed for religious places and faculties where dead silence is required. A portable device that is efficient for its purpose, lightweight and user friendly, which gives it an advantage over other currently used systems, huge bulky boxes that are overly expensive or small handheld ones that don't satisfy our main objective. The main functions and algorithms of the proposed system are achieved based on Tuning circuits, RF Circuits, and Antennas attached to the system. The main goal is to eliminate any distractions when it is useful, as well as market the technology in the right way to its hungry consumers.

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No		
		
12	**Project Title**	**PCB CNC Machine (Part 1)**
	Students' Name	Amr Tarek Mohamed Sameh
	Supervised by	Dr. Mohamed Ismail
	Abstract	A computer numerically control is a very broad term that covers different types of devices with digital Controls , different sizes ,images and functions , although we don't have enough supply or enough support PCB CNC Machine in the market however those people who use to create PCB have a huge problem on finding PCB specialized machine because it's size and it's price .all cnc machine in the market have maximum three axis which interference the human error due to the absence of the fourth axis. In proposed project, the fourth axis machine is used rather than three axis machine that will allow us to flip the PCB automatically to prevent the appearance of human error and we have created PCB CNC machine that cost efficient , CNC machine portable to be used in any place, of course it will give us more accurate and save time in our work . The main function of proposed system are achieved by receiving the coordinates from CADCAM to microcontroller that takes this signal passed to motor drivers that drivers takes this signal transfer it to motor which can motors moves the mechanical parts of machine So we have decided to created small fourth axis drilling and milling PCB CNC Machine that safe and cost efficient to be affordable to anyone would like to create PCB on desktop or at home or at office.

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No		
13	**Project Title**	**PCB CNC Machine (Part 2)**
	Students' Name	Mahmoud Mohamed Hashem Mohamed Ali Ahmed Elhamy mohammed el ghareeb
	Supervised by	Dr. Mohamed Ismail
	Abstract	First of all, the users had a huge problem in the prototyping of the PCBs and the developers solved these problems by creating many CAD programs that helps the users in designing their PCBs and also many CAM programs that helps the users in controlling their CNC machines through the computer to be more accurate. Those programs were very hard to the normal users to use as some of them had a complex GUI and not categorized so the programs were kind of complicated to most of the individuals, and also they were separate programs a CAD program and a CAM program, each program of them were licensed, and it was very expensive for the individuals to buy those licenses for each program to complete their own projects, also those programs lacked for some stability. Therefore, after doing some researches about CAD programs and CAM programs we decided to create an integrated CAD/CAM program in one program and in the same time, and it will be for free and it will depend on ads attached to the program to get profit, and it will support the users to change their tools, and it will support up to 4-axis CNC machines and to have an easy GUI to make it user-friendly for those who are unlettered.

No		
14	**Project Title**	**Ride-sharing Mobile Application**
	Students' Name	Mohab Magdy Shokry Maha Adel Saad
	Supervised by	Dr. Mohamed Hossam
	Abstract	Thermal imaging has many porousness and usage in many different fields like search and rescue also in the medical field, this project focus on the usage of thermal imaging in search and rescue situations as it can see throw darkness and smoke in cases of a fire. This project contains a wireless solution with a deployable method. This book discusses a brief history of thermal imaging in general and the main problems this project is aiming to solve. It also compares between some of the modern and old solutions showing advantages and disadvantages of each. This book discusses the working methodology of the project and our vision of the design then processes of testing featuring the cost analysis and concluding with the time plan.

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No		
		
15	**Project Title**	**Multi-source Power Bank**
	Students' Name	Hazim Mohamed Abdel-Moniem Fahed Ahmed Hesham
	Supervised by	Dr. Mohamed Hossam
	Abstract	Modern powerbanks typically charge using a wall outlet charger, along with one ambient energy source such as solar panels. Those limited options for utilizing energy sources hinder the energy availability provided by such solution, due to charging sources availability issues, also ambient sources were unable to deliver the required power in a reasonable amount of time, so this report presents various methods of harvesting ambient energies in the surroundings, and chooses more than one ambient source to be implemented in a portable powerbank, aiming to reduce the availability issues and increase the power income. Some techniques and design tweaks are presented to drastically increase the power harvested from chosen ambient sources. The report finally examines the efficiency of the powerbank compared with the other existing ones, while the main focus of the report is to exploit the use of solar panels due to its high power income, as well as Radio Frequency (RF) energy harvesting (EH) due to its high availability. Other sources are examined as well, which can be implemented to increase the rate of charging. The system also makes use of a microcontroller unit (MCU) to manage its functions. Therefore it is estimated that the proposed system will be able to charge its battery from solar panels in an appropriate time while maintaining the portability of the powerbank. The system will also be able to charge from the RF energy harvesting circuit, the power output from the circuit is estimated to be very low, but it is expected to be increasing the battery life in the long term.

No		
16	**Project Title**	**Fish farms water recycling smart system**
	Students' Name	Islam Mohamed Mohamed Ibrahim
	Supervised by	Dr. Amr El Awamry
	Abstract	Fish farms are essential for us thus it's fast to get its yield easy to raise a large quantity of them, on the contrary of raise of cows, it consumes lots of food and needs time to get the maximum potential out of them. In this project, I should make a fully automated fish farm that can monitor all the essentials of life for the fish. Also, control the whole system without the need of human hand in the process. The main objective of this system is to build a smart fish farm that is as efficient as the applied systems but more affordable by using *Commercially Off the shelf* components. This is a Microcontroller-based system with the Node MCU *"ESP8266"* as the base microcontroller of the system. An embedded software will be designed and scripted using the Arduino IDE and it will be installed on the Node MCU to execute the logic, control and arithmetic functions required from the Node MCU. The input data of the systems will be acquired using sensors to measure water temperature, PH level, Ammonia level, Oxygen level and Salinity level. The Actuators of this system are a Fish tank water filter, an Oxygen injector and PH level neutralizer. The system is an IOT-based system, which means that the Node MCU communicates with a cloud data base to send acquired data and receive instructions to be executed.

No		
		
17	**Project Title**	**Rooftop Garden Control System**
	Students' Name	Ahmed Mahmoud Taha Elemam Elshamy Moustafa Ayman Sabry Ahmed Elsaid
	Supervised by	Dr. Amr El Awamry
	Abstract	In this Paper we will discuss smart, low cost and monitored aquaponic system. First of all aquaponic system is a system that contain fish and plant in a closed loop system that will increase way of profit and decrease use of water. One of the main problems is lack of space so we will overcome this problem by making our system in two tanks above each other the down level tank is the fish tank and the upper level tank is the plant tank, another problem is lack of smart system in irrigation due to high cost so we will overcome this problem by making a low cost aquaponics system so we will use lab components instead of high cost sensors, also we will use low cost components and this will reduce the cost and give us the same results and the system will be operating normally and another problem is high consumption of water in irrigation we will overcome this problem by making a closed loop system which don't need large amount of water and we will use moisture sensor that the plant will not be irrigated unless it is needed only and the water is filtered to be used many times without needing to put new water to the system unless the water will cause an error in our system. Our system will be operating using solar power and we will have a backup battery which is the first system to do that, also we have a GSM module not a wifi module like other systems, our system also has a fish feeder and you can monitor our system anywhere because it is connected to a web page application that can send an email to the user if there is an error in the system. The sensors in our system are Temperature-Humidity sensor, PH sensor, Nitrate Sensor, Moisture sensor, Water Level sensor and differentiation sensor. All these sensor will send their readings to the microcontroller so the microcontroller will send these values to the cloud to be compared with data base values after that the microcontroller will take actions according to the optimum values if there is an error an email will be sent to the user in order to solve the problem.

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No		
		
18	**Project Title**	**Automatic Modern Irrigation System**
	Students' Name	Abdelhalim Moustafa
	Supervised by	Dr. Ayman Ibrahim
	Abstract	Egypt suffers from water scarcity and will face much tougher situations due to increasing demand. The country does not have the luxury to waste even one cubic meter of water. There are no quick or easy fixes to water scarcity but there are possible solutions. The first is pumping for underground water, which is expensive, takes time and draws on finite sources of groundwater. So the proposed solution is adopting a water-efficient agricultural technology by using an automated irrigation system, instead of the flooding techniques still used by most Egyptian farmers that waste most of the water. The proposed system's goal is to minimize water waste and help improve plant growth. This will be done by the sensor. These are temperature, Humidity in the air, moisture in the soil, ultrasonic water level sensor, and water flow sensor. We will also use the fertilizer weight and the rain weighting system. We will explain the subject in a nutshell, the user will enter the optimum value in order to know the quantity needed for the fertilizer and also the amount of water that will be mixed with the fertilizer and then we will work on the sensor rain and see if rain is falling or not and then see if the rain came down covers the required area of Irrigation or not and then check on the temperature sensor and humidity sensor if we will quantify more than usual. In this project, we reduce the amount of water loss.

No		
		
19	**Project Title**	**Automatic Monitoring of water flow using smart gate**
	Students' Name	Omar Mohamed Abo El Fotouh Youssef Omar Khaled Madboly Hassan
	Supervised by	Dr. Ayman Ibrahim
	Abstract	This project is designed for measuring the water flow rate in open channels using gate position and water level in an economic and accurate way. The renovation in this project is that the flow rate will be determined by the calculation of upstream water level, downstream water level, gate position and gate opening. All these calculations are going to be used as variables for a flow equation to calculate the water flow rate. The system has a priority over the systems that are applied nowadays because the system will measure the flow rate without utilizing flow sensors as this method is very expensive and require regular maintenance. So, the calculation of the flow rate based on water levels and gate position will be more reliable and will save us much money. The system will utilize a communication module to send the results to a server so that the flow rate can be monitored remotely. The system will utilize a GSM module as a communication module. The water levels will be measured using barometric pressure sensors. The gate position and gate opening will be determined using a position encoder connected to the DC motor which controls the gate.

No		
		
20	**Project Title**	**Automatic Operation and Control of Groundwater Wells**
	Students' Name	Yehia Ibrahim Mostafa Adel Sayed Hefny
	Supervised by	Dr. Ayman Ibrahim
	Abstract	In the last few years, Egypt started seeing a noticeable decrease in its water resources, so it started looking for new resources. One of these resources is the groundwater wells. However, in most cases groundwater is plenteous and that led to a new problem which is the overdraft which is defined as the extensive abstraction of water from the wells and this excessive abstraction can lead to many problems such as water table dropping too low that other wells have to be drilled further than it should be so we can extract water from it. Another problem is that the salinity of water increases to a level that makes the water non-usable for farming or drinking. In this report, a microcontroller is used to determine the water quality by comparing the data given to it with the reference data and depending on the results it will determine whether to extract the water from the will or not and then it will send the data to the main station. The main functions and algorithms of the proposed system are achieved based on embedded C programming language. It is shown that by applying the proposed technique the system will be easier to use and implement. in addition, it will be user friendly

No		
21	**Project Title**	**Smart Greenhouse Monitoring and Control**
	Students' Name	Hussein Mohamed Ahmed Maher
	Supervised by	Dr. Ayman Ibrahim
	Abstract	Since the beginning of life on earth, humans wanted to find a way to grow crops and plants at any time of the year without caring about the current climate or conditions and doing this was impossible till the invention of greenhouse came to life. The previous systems of greenhouse faced a lot of problems, some of them are related to the soil and some other problems are technical related. Greenhouse soil has problems such as nutrient accumulation, heavy density, acidification, temperature and salinity, which largely affects the soil quality. All these factors limit crop production. Greenhouses also need a better irrigation system in order to save water and keep the soil always hydrated, so the purpose of this system is to be capable of intelligently monitor and control the greenhouse soil conditions in order to show advantages in cost and flexibility. Greenhouses also face some technical problems like lacking automation as previous systems only monitor the current condition without taking actions which decreases the reliability and requires more effort from the user. Old systems relatively consume high power as they don't use renewable cheap energy source. The main objective of this project is to automate the system in a goal to increase reliability and accuracy, also adding automation will decrease human interface which will lead to less errors therefore it will increase the crop production which is our main objective. Also one of the objectives is decreasing power consumption by using solar energy as it's clean, neat and cheap. This will be achieved through monitoring 6 different parameters and designing suitable control actions for providing the best environment for the plants and establishing a wireless communication between the system and user for easy monitoring and control. It is believed that the outcomes of the project will provide the opportunity for further research and development of a better production for greenhouses.

No		
22	**Project Title**	**Wireless home automation using internet of things**
	Students' Name	George Essam Nasif
	Supervised by	Dr. Hatem Zakaria
	Abstract	In the shed of great growth in the field of Internet Of Things (IOT) and the field of smart home, interconnection between them is need so smart automation homes are invented. In this project we going to apply these technologies Home Automation System (HAS) and IOT be using wireless smart sensors in a wireless sensor network (WSN) using Wireless Fidelity (Wi-Fi). Applying concept of internetworking of smart devices, A Wi-Fi based automation home is designed to monitor and control devices, make home safer place by using wireless sensor nodes. One of the objectives is to control consumption of energy which costs a lot and can be implemented on any home to convert it to smart one. This smart home consists of microcontroller, Wi-Fi module and sensors.

No		
23	**Project Title**	**Women Safety: A device to keep women safe**
	Students' Name	Nourhan Tarek Mohamed Ahmed
	Supervised by	Dr.Ahmed Salah
	Abstract	Women all over the world are facing harassment almost daily whether it is sexually, physically, or verbally, leaving a negative impact from such an act on them emotionally or physically leading to lack of self-confidence, losing concentration, being less productive, and always under stress and nervous, whether in work or even their duties at home. This issue in Egypt is a way worse with a high percentage 99.3%, and no action was taken to prevent this phenomenon. This proposed system is discussing a system to help women to get help from their relatives and increase the rate of the incident response. The device will be able to locate the user's position by the GPS system and send it within a SMS message with captured images of her view field to be used as an evidence late through the GSM to pre-selected contact list, as well the system will be recording a 5 minutes' audio and upload it to a server so it also can be used for later. There will be an accessory (bracelet) as an extra protection layer with biometric sensors which can be able to measure the body's temperature as well the heart pulse rate and also the body's balance. Those measures also will be uploaded to the server so it can be used for later as medical history and warn the user's relatives if there are any abnormal readings.

No		
24	**Project Title**	**Railways accident prevention system**
	Students' Name	Esraa Adel Mohamed Mohamed Ramadan Eid
	Supervised by	Dr.Ahmed Salah
	Abstract	It's known that life of people is the most important thing in the universe. Scientists, thinkers and Geniuses always search for solutions to the problems that threatening people's life and one of those dangerous problems is railway accidents. With increased people and digging to provision a comfortable transportation to them, it was the increased of accidents and loss more lives. And by this way and by increasing of people and trains, the accidents increase every year and more than one million are affected by these accidents between injured people or killed people. Those accidents occur due to more reasons, and now most of countries are digging to solve this problem by avoiding the reasons by more of one way. They innovated new systems with new high safety level, they are trying to build a very strong communication between trains to make every train has a fully vision about the entire situation and avoiding any coming danger. And in this project we are trying to solve this problem and look to the sides which not included in the previous solutions or systems. The purpose of this system is to implement a system to monitor and track the train during movements and working hours. The system provides monitoring the location of the train by GPS, and we avoiding the less accuracy of GPS by using another localization module and send this data to monitor station using a communication module. Our project also provides another communication module between trains if there is no coverage of the first module. Also, this data will be saved on server to be used as evidence if there is any problem, in addition to website which made to connect the train to monitor station. This project also monitoring the health and the physical situation of the driver using sensors and detect also his existence in the locomotive at variance the previous systems which didn't provide this option, and send all of this data to the server and monitor station to has a fully vision about his situation. This project also decreases or eliminates the human errors which lead to accidents in crossing gate by using a sensor to detect the existence of any object before the train comes to the gate and send the result to station using a communication module. And finally we make this system to maintain people's life and prevent the railway accidents disaster.

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No		
		
25	**Project Title**	**Smart waste bins for smart cities**
	Students' Name	Aya Assem Mansour Abdel Moneim Dabash Menna Allah Hesham Ibrahim Abass
	Supervised by	Dr.Ahmed Salah
	Abstract	A large amount of various type of waste is being generated, which cause a major problem for many countries. As there is no proper operation for collecting the garbage due to human behavior. Human does not know how to get rid from the garbage so it ends up by throwing them anywhere, which cause health issue and make the environment unhealthy. So the objectives of the proposed system to reduce from the hazard which is resulted from wastes, which is reducing the pollution, advancing the recycling process and encouraging the citizens to contribute in the recycling process. These objectives could happen through the proposed system, as the smart waste- bin that can manage the waste in a city that includes 6 slots for 3 types of materials (2 slots for each), that are metal, plastic and paper. The system consists of 3 different types of sensors, which are air quality sensors for detecting toxic gases, proximity sensors for detecting types of waste and ultrasonic sensors for detecting the waste level. Beside sensors, the system consists of solenoid valves, A GSM module responsible for transmitting a message to garbage car when the bin gets filled. All of the system components are controlled by a microcontroller being programmed by the developer. So to conclude at last with the proposed system an autonomous system is generated for the detection of the type of the garbage, detecting the garbage level, sending the bin data to the server, detecting if there is any contaminations and the system is powered through a solar cell.

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No		
26	**Project Title**	**IoT-Based Safety system for shops in smart cities**
	Students' Name	Omar Mohamed Shawky Ahmed
	Supervised by	Dr.Ahmed Salah
	Abstract	This project describes a safety system for shops using an embedded system with the Internet of Things (IoT) technology. The safety system is mainly implemented to prevent theft and robberies and to ensure the business operations are being safe. This safety system can help prevent robberies by calling the police station directly to come as soon as possible. It can also call the shop owner about the theft accident, not also that; it can send messages to the owners of neighbour shops which are connected together. The same algorithm will be applied in the fire accident and all the owners will know about the accident and which shop is fire alarmed. With this safety system, you can ensure the employees and clients are safe from any accidents or harm. Also, you can ensure the business stuff especially when you are on long vacation because you do not have to call the police and/or the emergency station.

No		
		
27	**Project Title**	**Traffic Monitoring and Control in Smart Cities (Part I)**
	Students' Name	Dalia Ahmed Fathi Zaki Mohamed Ashmawy Abdel Aziz
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	The Traffic Monitoring and Control System solves one of the major issues in roads, which is traffic congestion. This is due to an increase of population and markets. Consequently, congestion leads to delays in traveling time and more fuel consuming. There are many systems which try to solve this issue, but they had various drawbacks such as the lack of reliability and efficiency, or the increase in cost and complexity in order to implement systems like these, so they need to be developed. In our proposed system, we take advantage of the great development in machine learning and big data analytics and integrate them to create a smart, efficient and reliable traffic control system. In the report, we divided it into three chapters, the problem is elaborated first with details and our main objectives, then the old applied systems with their descriptions, advantages and disadvantages, followed by our proposed system's block diagrams and flowcharts

No		
		
28	**Project Title**	**Traffic Monitoring and Control in Smart Cities (Part II)**
	Students' Name	Frass Mohamed Ahmed Amr Essam Mohamed
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	In traffic management systems (TMS), controlling and reducing the traffic congestions are a must. One of the main problems that cause abnormal and unexpected congestions is incidents. Incidents are a very serious issue and could lead to more serious circumstances like losses in properties or maybe worse (human losses). Studies shows that approximately 25% of congestions are caused by incident like crashes. Unfortunately, we have no control on how or when incidents occur. However, early detection will prevent or at least reduce its negative effects. So, TM systems use various approaches and techniques for the early detections of the incidents. In this report, we discuss one the TM systems use for early detection of the incidents on the roads that's is based on s the machine learning algorithms AID. We briefly explain the methods used to obtain the road data, we describe some AID algorithms and compare their performances, and finally we discuss some other machine learning techniques that can be used on incident detection.

No		
		
29	**Project Title**	**Power Control in Homogeneous Networks using Machine Learning Algorithms (Part I)**
	Students' Name	Amr Mohamed Adel Youssef Tarek Aly
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	The technology is going towards a huge need for a utilized spectrum to be used; due to the continuous growth of technology nowadays and the enormous demand for technology in all life fields. The Cognitive Radio technology is one of the most promising technologies for the future use due to its features for utilization and availability; however, there comes a one huge facing challenge which is power control to avoid the power loss that occurs due to the interference between primary users and secondary users in the cognitive radio spectrum. This paper proposes a smart solution for co-existing all type of users together and at the same time to minimize the interference and maximize the bit rate.

No		
		
30	**Project Title**	**Power Control in Homogeneous Networks using Machine Learning Algorithms (Part II)**
	Students' Name	Sherif Islam Elsayed Elkady
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	The purpose of CR (Cognitive Radio) network is to optimize the use of frequencies in our environment and to distribute the limited radio spectrum resources efficiently. Spectrum sensing and power efficiency characteristics in the CR networks since the there will be always noise in the environment affecting the detection of other networks and the battery life of the system. Therefore, this report introduces technique to combine solutions for spectrum sensing and power efficiency together with some improvements instead of solving each problem alone. The main functions and algorithms of the proposed system are achieved based on artificial intelligence while the system will be implanted on a simulation software NS2.

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No		
		
31	**Project Title**	**NFC-based System for School Children Transportation System**
	Students' Name	Ahmed Ibrahim Amin Asran Muaz Mohamed El-Gioushy
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	Recently all over the world, crime against children is increasing at higher rates and it is high time to offer safety support system for the children going to and from schools. However the existing systems are not powerful enough to prevent the crime against children since these systems give information in low assurance about their child safety to parents. The proposed system focuses on implementing children safety system for every child attending school. The proposed system aims to monitor pickup/drop-off of school children to enhance the safety of children during the daily transportation from and to school. The system consists of three main units, a bus unit, a school unit and a web-based application unit. The bus unit system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized people. A complete prototype of the proposed system is going to be implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

No		
32	**Project Title**	**Integrated lab kit**
	Students' Name	Omar Mohamed Ahmed Abdel-Baky Karim Samer Mostafa Ahmed Ali
	Supervised by	Dr. Ahmed El Moslimany
	Abstract	In engineering field, especially for engineering students, electronic instruments such as digital multimeter, oscilloscope and function generator are essential for data analysis and acquisition. But these instruments are very expensive and bulky in size so many students cannot afford them easily for their educational purpose. So the objectives of the proposed system is to implement an isolated pocket sized device combining the mentioned three device in one device to be easily affordable for each student. These objectives could happen through the proposed system, as the engineering integrated portable device consists of a portable low cost hardware device interacted with a software application. The hardware device mainly consists of three parts, the first Part is for the digital multimeter which includes a current sensor, voltage divider circuit and resistance measuring circuit .The aim of this part is to measure current, voltage and resistance. Second part is for the oscilloscope that consists of signal conditioning unit to filter the signal. Finally the third part which is relevant to the function generator that contain digital signal processing unit which is used to process the signal and the amplifier circuit which is used to amplify the signal by increasing its amplitude . Moreover the project consists of microcontroller that acts as the brain of the system where each part in the system is connected to it to manage the whole system. Also the system provides a user friendly application through the smart phones to facilitate its operation for the users and to display the results through it which is connected wirelessly with the hardware device. Finally the system takes their operating voltage through an USB power inlet.

No		
		
33	**Project Title**	**Smart Nurse calling system & Medical Monitoring System**
	Students' Name	Mohamed Mahmoud Mohamed Marzouk Ahmed Ramadan Abdel Razek Omar
	Supervised by	Dr. Waleed El Nahal
	Abstract	There are some essential problems facing the hospitals nowadays that the nurses sometimes don't serve the patients even if they need them because of lack of supervision on them, also sometimes the nurses don't know whether this patient is allergic to any type of medicine or not so the lack of information about the patient may cause a serious problem and one of the major problems is the medicine theft that are taken from hospitals. The proposed system aim to make provide supervision on the nurses so that they serve the patients, provide information about the patient so the nurses or doctor don't give a wrong medicine and at last to monitor the medicine and not to provide any medicine without seeing the diagnosing of the patient. All these objectives is going to be achieved by implementing a system which has two buttons one for nurse calling and the other one is to make sure that the nurse has served this patient, putting in the database all the information about the patient to avoid giving the patient wrong medicine and to put all the medicine stock on the database so the medicine can be monitored. So by applying the proposed system the hospital will insure better quality for the nurses' services, save more lives because a lots of people die because of giving the patient medicines that they are allergic of and prevent medicine theft.

No		
		
34	**Project Title**	**Bio-Medical Device for Blood Glucose & Heart Rate Measurement using Non-Invasive Technology**
	Students' Name	Abdalla Radwan Saad Mustafa Hassaan Muhammed
	Supervised by	Dr. Waleed El Nahal
	Abstract	The quantity of individuals affected by diabetes is rapidly expanding around the world due to aging population and sedentary lifestyle, with the possibility of exceeding 500 million cases in 2030, bringing out the most socio-health crises of the 3rd millennium. Monitoring blood glucose concentration levels daily is an advantageous thing to avoid a problem in health. The devices available in the market have many side effects as they use an invasive method in measuring glucose concentration level. Over the last few years, blood glucose level is self-monitored using an invasive glucose meter. Invasive method of testing blood glucose concentration causes a risk of skin infection, physical and psychological pain due to pricking the finger at least three times. Currently, there are some devices that monitor glucose concentration levels continuously and they are called continuous glucose monitoring (CGM) devices. CGM devices working by placing a sensor on the body by a needle stick. Nowadays, there are a lot of researches about a new technology which will be used in measuring blood glucose concentration with a non-invasive way to dispose the side effects of the available devices in the market. The purpose of this project is to provide a non-invasive technique for measuring blood glucose concentration level to replace the available devices in the Egyptian market. A photoplethysmography(PPG) signal is used to estimate the concentration of blood glucose. PPG signal is obtained using near-infrared spectroscopy which contains near-infrared (NIR) led and Indium Gallium Arsenide (InGaAs) photodiode of peak wavelength 1550nm. Artificial neural network (ANN) is used to build a predictive model to estimate the glucose concentration levels based on PPG signals.

No		
		
35	**Project Title**	**Smart Traffic management system via connected vehicles**
	Students' Name	Ahmed Nabil Saad Dkhil Hammad Mahmoud Gamal Saad Zagloul Mokhtar
	Supervised by	Dr. Samer Ibrahim
	Abstract	The traffic jam is a major problem all-over the world because of accidents and congestions in the rush hours throughout the day, and the waste of money and time is really priceless, also the pollution caused by traffic congestions is destroying the environment. Following-up the vision of the smart city there is a need to an adaptive, fully-autonomous traffic management system to tackle the traffic and mange it accordingly to achieve the real-time decision, minimize the trip time as possible, and save lives by prioritizing the vehicles to emergency and normal vehicles, and reduce the pollution of the vehicles and it's harm to the environment, and cost less compared to the other systems, and these are the main objectives that our proposed system is going to tackle, and the main features compared by other systems and projects. This is going to be accomplished by using Dedicated Short-Range Communication protocol (DSRC) between the vehicle and the traffic light and vice versa, and the intelligent traffic light will take decision in real time and adapt the situation and re-route by using Machine Learning algorithms. By applying the proposed system, the wasted time and money in fuels can be reduced, and also lives is going to be saved.

No		
36	**Project Title**	**Smart IoT Plant Diseases Detection System**
	Students' Name	Ahmed Mohamed Adel Khaled Ehab Mohamed
	Supervised by	Dr. Samer Ibrahim
	Abstract	The Internet of Things (IoT) technology is presently shaping completely different aspects of human life. Precision agriculture is one of the applications which may use the IoT technology to optimize the production efficiency, optimize the standard of the crops, and minimize the negative environmental impact like plant diseases. Plant diseases are generally one of the most important problems that threaten the world's agricultural, causing large losses in agricultural production of about 25% per year. The proposed system is consisting two main features proactive and reactive, the proactive part is based on the data collected from the sensors at plant environment, forecasting weather data from weather stations, and historical data. The reactive action is based on the image processing technique which to monitoring the field if there are any early symptoms appears on the leaf of the wheat to help the system to be more accurate and the right reactive action.

No		
		
37	**Project Title**	**SMART IoT irrigation system for customized soils**
	Students' Name	Ayman Said Waly Gamal Al-Din Ayman
	Supervised by	Dr. Samer Ibrahim
	Abstract	Irrigation uses about 70% of available freshwater resources, large amount of water that uses in irrigation is wasted because the weakness in efficiency water management. In this project smart iot irrigation system is aimed to optimize the efficiency of water management. the system predict the weekly irrigation schedule that needed to plant through the soil measurements like soil moisture and climatic variables like temperature and humidity, all of this measurements collect from the sensors that deployed in the field. These measurements will use to predict weekly irrigation schedule through machine learning techniques and use this schedule to make the control in the irrigation water is automatic based on microcontroller that connected to actuator. Our system is validated on wheat. Performance is tested through compare between system results and agronomists recommendations

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No		
38	**Project Title**	**SMART Connected and Autonomous Vehicle system**
	Students' Name	Mohamed Gamal Mohamed Taha Ahmed Abdelazim
	Supervised by	Dr. Samer Ibrahim
	Abstract	Commuting is an exhausting activity. Not only does it consume time and energy, it also, due to the long time it takes, makes distraction an easy and inevitable action. Moving your eyes from the road may cause accidents that have a large negative impact on the drive, his/her car and the surroundings. To tackle these problem, multiple car manufacturer introduced a variety of technologies that assist the driver, these technologies include CCS, CWS and multiple other techniques that ensures the driver safety. Research papers has presented the idea of autonomous vehicle, each proposing a different take on how a car precept the environment around it using arange of sensors and act upon these data. Our Research paper review these different techniques proposed by multiple already established papers, go through the different technologies car manufacturers use in their cars to detect obstacles and actions taken to avoid them.

No		
		
39	**Project Title**	**Intelligent Urban Transport Tracking and Management System**
	Students' Name	Bishoy Maher AbdElSayed Moawad Muhammad Abd El-Hady Muhammad Mahmoud Ghonaim
	Supervised by	Dr. Samer Ibrahim
	Abstract	Egypt's current bus system is large enough to satisfy a significant portion of the population's demand, yet fails to do so due to mismanaged resources. Static lines and unclear schedules create a confusing and unappealing user experience which pushes more of the population to cars for their transportation needs. This clearly leads to more congested streets which result in a net loss of productivity as well as an increase in stress, unnecessary fuel consumption, and harmful emissions. An intelligent bus solution is multi-faceted. It consists of (1) connected buses which are capable of providing their geo-location data, feedback about driving behaviour, and health data to detect failures before they occur; (2) cash-less payment through RFID cards to ensure much tighter control over pricing; (3) a processing server or cloud, in which all of the incoming data would be handled; (4) knowledge systems which dynamically optimize bus schedules and routes through learning algorithms; (5) a mobile application to capture demand and inform passengers of bus arrival times. The main functions and algorithms of the proposed system are achieved based on machine learning algorithms and web technologies, whilst the hardware component is implemented based on System-on-Chip technology with custom hardware to interface with the vehicle. It is shown that by applying the proposed system to a previously static bus system that fuel consumption, maintenance costs, and carbon emissions can be reduced by 10-20% while overall passenger satisfaction can be increased.

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No		
		
40	**Project Title**	**Indoor Location Based Information Transfer For Moving Clients**
	Students' Name	Muhubo Abdilhakiim Artan Musse Abdullah Ayman Hassan Hussein Ahmed
	Supervised by	Dr. Samy El-Hennawey
	Abstract	For many years Egyptian museums often display text information about the available objects, which can't be displayed in all foreign languages. Also, they lack the interactivity factor which plays a great role in making the tourist excited and interested to know more. A solution to this is by tour guides, who can explain to tourists the required information needed. Various groups and Tour guides of different languages perceptibly will make the environment rather noisy and discomforting, including discouraging sometimes due to the lack of communication that usually occurs between them and the tourists. Recently, automated systems based on mobile phones and localization methods were introduced. Even such indoor localization systems that track tourist location and display information require certain considerations such as, distancing objects from each other. They also display audio content only, which isn't as interactive and enthusing as videos. This project proposes new design and implementation for a special purpose handheld device, capable of displaying different types of high quality multimedia on an interactive screen of high resolution. Unlike existing systems, the proposed device doesn't require any infrastructure. Instead, it uses the building's access points in order to estimate its location. It then sends its estimated location to a database server in order to receive different multimedia files for the nearby objects. The main function of the location determination is achieved using Wi-Fi access point devices and implementing the trilateration algorithm based on received signal strengths from different access points. The system is based on a micro-computer, and a touch screen that's capable of displaying high quality multimedia. The system also makes use of a database server to store and then to retrieve the multimedia contents on demand. The Wi-Fi location systems have been applied before in museums. However, all of these systems neglect the heights of the access points. Upon visiting the Grand Egyptian Museum, some halls were seen of height's approaching 35 meters. As such, it is intended in this project to take these heights into consideration in the determination of the handheld device location. This is expected to provide more accuracy even over existing systems with small and medium heights. The proposed system is estimated to have few centimeters accuracy for location determination. It's also estimated that the system will be able to run high quality video files without lagging. While it is proposed to have a stand-alone handheld device based on components as a final project, the work in this project will concentrate on employing a Raspberry Pi as a proof of concept.

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No		
		
41	**Project Title**	**Smart Trolley for Hypermarkets**
	Students' Name	Mirette Shafik Solyman Ibrahim Shirin Sherif Mounir Fawzi
	Supervised by	Dr. Said Mabrouk
	Abstract	Nowadays in the modern society everything is done very fast due to lack of time. Shopping is an essential practice in life so everybody has to dedicate some time for this process. Therefore, the time required for the shopping process should be reduced for the customer convenience. The customers spend too much time standing in long queues to pay their bills this may lead them to lose their time and temper. Moreover, the customer might waste time in searching for a specific item or for the price of an item and the products that exist in the offer list. Various techniques have been adopted to solve these problems like attaching NFC or RFID reader to the top of the trolley to help the customer know the price of scanned item easily. In addition to calculating the price of purchased items, displaying it on the LCD attached to the trolley and sending this bill to the cashier so that the customer head to the cashier only for bill payment without spending a lot of time standing in long queues. The previous systems showed drawbacks such as short battery life, charging problems, loss of time and money as the customers do not know the locations of the products that they want to buy or these on the offer list, which have been considered in this proposal. In addition, the genuine idea of this piece of work is the addition of a tracking system which helps the customer to identify the location of the products and display the offers list on the screen which is attached to the trolley, the battery life has been extended by adding a dynamo to the trolley.

No		
		
42	**Project Title**	**Multi-purpose remote heath monitoring system**
	Students' Name	Joustin Rezk Mahrous Nourhan Reda Sultan
	Supervised by	Dr. Said Mabrouk
	Abstract	The society suffers from a lot of diseases that can make the human die in minutes from the deprivation of oxygen-blood level, due to severe slowness of heartrate and temperature that can leads to a heart failure suddenly. This problem occurs especially in elder family members aging above 65 years and for newborns that make them need assistant in home or hospital to take care of them, so the patient pay a lot of money and in most times needs a routine check of the oxygen blood level, heartbeat rate and temperature as any change in them can makes the patient's life in danger and applied systems can measure only but can't diagnose remotely or save the patient life. Our proposed system is going to solve this problem by integrated device that combine between three sensors which are temperature sensor, heartbeat sensor and oxygen blood sensor and compare reading with normal reading so if it is abnormal, the reading will send to doctor, display on LCD, locate the location of patient by GPS, give alarm to patient and doctor but if it is normal, the reading will display on LCD and send to server.

Graduation Projects of the Academic year 2018-2019

No		
		
43	**Project Title**	**Virtual Reality-based Tele-rehabilitation Model of Physical Therapy**
	Students' Name	Aya Allah Fattouh El-Bahie Fatin Hamid Osman Addalla
	Supervised by	Dr. Said Mabrouk
	Abstract	Worldwide, stroke is the second leading cause of death and the third leading cause of disability. It often causes paralysis on one side of the body. In the first weeks and months of recovery, Rehabilitation can help patients to keep the muscles toned and stimulated. Many patients may face some difficulties in driving and going to the rehabilitation center either due to their disability or the high cost of transportation. Also the repetition of a painful exercise may seem unappealing for the patients that may lead to discontinuation of home physical therapy. Virtual Reality (VR) provides useful rehabilitation applications, motivation, and feedback, for chronic stroke patients. In this paper a model which provides the patient with a fast and simplified way of performing home therapy is described. This model is based on virtual reality, movement tracking and sensor reading. Technically, it consists of interactive virtual reality games that increase a patient's motivation and concentration, a camera for motion tracking and embedded systems for tracking physical abilities during gameplay. The tracking operation of the patient's motion in the proposed system is achieved based on image processing, while the embedded system which monitor the patient's progress is implemented based on virtual reality. And for the software part, C# will be used and will be rendered using Unity 3D engine to build up the virtual reality interactive game.

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No		
		
44	**Project Title**	**Automatic Waste Segregation (Part 1)**
	Students' Name	Marwan Hesham Mohamed Nourhan Tarek Ibrahim
	Supervised by	Dr. Said Mabrouk
	Abstract	Due to huge increase in the population of Egypt, so the amount of the garbage increases as it has a bad effect and threats the living being lives. So the best solution for this huge amounts of waste is to segregate them, as the segregation process helps in recycling. The segregation means to separate different types of waste from each other to make it easy reuse. The segregation process had been developed among the previous years, at first they used manual segregation by using mankind then now a days it developed to be automatically. There are many countries use segregation process due to the enormous amount of waste, but every system is different from the other one. As some systems segregate metals only, others segregate metal, dry, and wet waste. Every system is unique in the technology, design, and the types of waste they segregate. Although they are completely different from each other through the previous categories, they all depend in the beginning of the process to the interference of the mankind which expose mankind to injure due to dealing with chemical and hazard wastes. So our main goal in this project to avoid this issue and to develop the automatic segregation process to be fully automated by using the microcontroller. We will segregate the main categories of waste: metallic, dry, and wet waste. We will use blower with specific pressure to segregate between dry and wet waste according to their weight, electromagnetic arm and permanent magnetic pulleys to segregate metallic waste and then wet waste will be segregated automatic due to gravity. This system can be used in many places such as: cities, compounds and others.

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No		
		
45	**Project Title**	**Automatic Waste Segregation (Part 2)**
	Students' Name	Ramy Mostafa Mahmoud Saeed Dahroug
	Supervised by	Dr. Said Mabrouk
	Abstract	Rapid rise in the population and urbanization has led to a large increase in the generation of municipal solid waste (MSW). The segregation, transport and disposal of this waste must be managed properly to lower the risk on the health and safety of the public and the environment. The economic value of waste is achieved only after it is segregated. This report targets dry waste segregation as it contains the highest percentage of valuable waste that can be recycled. This project aims to segregate the dry waste into four categories by two different techniques using the Near Infra-Red (NIR) and the capacitive proximity sensors. After the waste has been segregated, a compactor will be used to decrease the volume of the waste and a Global System for Mobile (GSM) module will be implemented to inform the recycling companies to transport the segregated waste.

No		
		
46	**Project Title**	**Real Time Waste Vehicles Monitor, Tracking and Control System**
	Students' Name	Khaled Tamer Khairy Abdelhamid Mohamed Salah Salem
	Supervised by	Dr. Said Mabrouk
	Abstract	The problem is the inefficient methods of transporting waste. The project aims to help mainly the waste transportation companies to overcome the barriers that they face, such as a weak monitoring system for the vehicles routes, lack of safety standards and information about the vehicle load. From this problem definition, some main Objectives was concluded for the proposed system. First to provide a real-time monitoring system for the vehicle, to provide an efficient system for informing the company with accurate data about the load and the vehicle, and to provide necessary precautions to minimize the waste loss while being transported. When these objectives are met this will result in reaching the minimum number of random dumpsites, supplying the user data about the load, analyzing the performance of the workers. The proposed system tracking sub-system is based on GSM and GPS, and for safety sub-system, some sensors were implemented to inform the users about the load safety and the data is sent by the GSM to the Website, which is the presentation interface. The proposed system contributed by providing a flexible billing method for the clients according to their usage by the weight sensor, supplying information about the amount of waste collected and dumped in its certain places daily , Providing necessary precautions to minimize the waste loss by implementing a level and tension sensor which will result in checking the net state after passing a certain level to prevent waste loss, and to decrease the amount of hazardous environment factors by implementing a heat, poisonous, and smoke sensors to prevent any harm that would happen to the load and the environment.

No		
47	**Project Title**	**Design and Development Solar Energy System for Housing**
	Students' Name	Mohamed Awny
	Supervised by	Dr. Said Mabrouk
	Abstract	The solar energy has different ways to obtain energy. They differ in the supply power and where the power is stored. As in the On-Grid system there is no battery and is connected to the utility Grid and this is an advantage as the battery is very expensive. But also, this system is bounded to the utility Grid. However, The Off-Grid system is not bounded to the grid and can be established anywhere without the need of infrastructure. finally, the hybrid system offers the best of the two systems as it is not bounded to the grid and it increases the life time of the battery. In this project I aim to design a smart solar system for housing that is hybrid meeting the needs of the consumer. Also preforming the Calculations of the power consumption of the house and Monitoring of the panels performance to increase the efficiency and The Design of an inverter circuit that is suitable for the system. This house is an example of the houses that will be used in the project of one and half million acres.

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No		
		
48	**Project Title**	**Grey Water Treatment and Smart Irrigation System**
	Students' Name	Mohamed elsayed fahmy Abdel Rahman Ahmed Sayed Matar
	Supervised by	Dr. Said Mabrouk
	Abstract	This project proposes intelligent and smart grey water treatment monitoring system which can be used for monitoring the water quality before and after treatment. It controls the Pumping water from homes automatically where the need of human intervention can be reducing this mainly focused on wastage of water and this called Grey water**.** Grey water is used water that comes from bathroom sinks, showers, tubs, and washing machines. The system has sensors which measure the quality of the water like salinity sensor; water level and switches relay which controls solenoid valve according to the requirement. There are a lot of systems that used in water treatment but they had Bad management causes a high rate in wasting water, beside There is no intelligent monitoring system that relies on monitoring all the details of the water treatment and controlling process. In our project, we are trying to help many people by making their life much better by showing them how they can get more benefits from saving water and use it in irrigation. Reusing your grey water keeps it out of the sewer or septic system, thereby reducing the chance that it will pollute local water bodies. After treatment we can use this water to irrigate the yard and landscapes. Grey water treatment will help us to save as much as possible until we can use it as a source of irrigation water.

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No		
		
49	**Project Title**	**Smart Mug**
	Students' Name	Amira Osama Abd El-Menaam Hamed Mostafa Ahmed Hafez Ibrahim
	Supervised by	Dr.Mohamed Samir
	Abstract	Being hydrated considered is an important thing for the human body. According to statistics, the adult human body needs liquids consequently specially water at least by 60% to regenerate its cells, regulate its temperature, and improve its productivity. Drinking impure liquids that include a high percentage of dissolved solids and the habitat of drinking after long time intervals lead to the dehydration phenomenon. This phenomenon causes dangerous diseases to the human body such as kidney failure, heart failure, nervous central damage, and weakens the immune system of the human body. The proposed system came to help people to avoid dehydration by tracking their body hydration level by calculating the volume of liquids needed per day, and a reminding system for drinking within specific time intervals. Reminding will be through both the mug and mobile application in order to make sure that the user does not forget to drink. Also the user will know if the liquid in the mug is valid to drink or not by using the TDS measurement circuit. Some data of the user such as height, weight, age and gender will be stored in the mobile application and used to set a suitable daily target for each user. Also there are extra features like find my mug feature to prevent losing or forgetting the mug in order to keep the user hydrated in addition to the temperature controller to reach a desired temperature for drinking the liquid.

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No		
		
50	**Project Title**	**Frequency Hopping Carrier Generator**
	Students' Name	Aya Hesham Ismail Salma Khamis Fekry
	Supervised by	Dr.Mohamed Samir
	Abstract	In a time where wireless communication has become essential, interference and jamming have become two of the main goals of people to try to avoid them. And to overcome these problems methods like Frequency Hopper Spread Spectrum (FHSS) or Direct Sequence Spread Spectrum (DSSS) have been used. This paper proposes the use of the Frequency Hopping Carrier Generator; where instead of transmitting data using a single frequency, the system would transmit through multiple carrier frequencies, alternating between them after a certain amount of time using a pseudorandom sequence; and so it would look like a spectrum of noise and no one would notice the transmission. The main functions and algorithms of the proposed system are achieved based on generation a pseudorandom sequence using Pseudorandom Number Generator (PRNG) while the system is implemented based on the use of voltage controlled oscillator (VCO), phase-locked loop (PLL), and frequency synthesizer. The proposed system offers a simple module that can be implemented into any system to generate carrier frequencies that can hop around the spectrum to help in avoiding interference in the system or the band, and it would put a certain wall of difficulty for jammers and eavesdroppers.

No		
51	**Project Title**	**End-to-End Encryption for Digital Audio Communication**
	Students' Name	MIRNA MOHAMED SAID HASSAN
	Supervised by	Dr.Mohamed Samir
	Abstract	Today in the widespread technology world, securing the data plays a vital role. Since many people prefer to the use of voice communication instead of texts, capturing both data types became as easy. Due to the increased data breaches, encryption has recently received an increasing attention as a way to protect against such threats. This report focuses on providing privacy for voice calls. The system's purpose is to securely transmit voice data between two users, while keeping it an open source for a more reliable experience. Encryption can be done using various algorithm techniques, DES, 3DES, AES, among others. However, AES has proven to be the most secured algorithm until the present time; therefore, the proposed system encrypts data using AES technique.

No		
52	**Project Title**	**Elevator black box**
	Students' Name	Abdulaziz Mansour rashed Mohammad Alenezi
	Supervised by	Dr.Mohamed Samir
	Abstract	Lifts or elevators (as found in the scientific literature) are installed in buildings to meet the vertical transport needs of their occupants. The total vertical transport capacity of a building is a crucial factor in its success as a working, living, or service facility. Elevators must be easily accessible, available, proportionate and provide quality and reliable service. This project discusses the configuration and functions of the Elevator Black Box System. This system focuses on monitoring of real-time elevator Health and also uploads the monitored data to cloud application for further investigation in the case of an accident. This system helps the accident investigators as well as insurance companies to find out the cause of the elevator crash. The previous solutions in elevator surveillance systems are analyzed earlier models. This leads to proposing development for an integrated system with minimalistic hardware and high performance. This system uses IOT platform as it support IOT clouding server to provide features for accident monitoring. Apart from video monitoring, other features such as motion, speed tracking and vibration features are also provided in the system. The perspective of this project is to make the user feel more safety about the elevator and to help knowing the actual cause of accidents if any. Therefore, Internet of Things concepts have been adopted by several businesses to improve operations. This project describes the challenges that arise when implementing the ideas of the Internet of Things, regarding technology, interoperability and architecture of Internet of Things-compatible systems. Besides introducing the basic theories and concepts used to attack the mentioned challenges of Internet of Things applications, which aim to conduct the concepts of Internet of Things to provide an open information platform for the elevator safety sector utilizing "Elevator Black Box". In this system, the microcontroller will be connected to a camera module that will get a live surveillance for the situation inside the elevator, and a DHT11 sensor to determine the temperature and humidity inside the environment of the elevator, and Smoke sensor to detect any smoke inside the elevator to give fire alarm in case of smoke detected, vibration sensor used for detection of high vibration in the motion of the elevator as well as shock, and finally the Gyro sensor will be used to determine the motion of the elevator. All these information's will be uploaded to IoT server to be monitored in real time.

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No		
53	**Project Title**	**Smart Glove with gestures recognition ability**
	Students' Name	Muhammed Ossama Muhammed Ibrahim
	Supervised by	Dr. Ahmed Diaa
	Abstract	The world loses everyday many intelligent ideas of the mute people due to the miscommunication between the mute people and the normal people. The mute people have intelligent skills but because of their disability they cannot express their ideas so the world loss a massive talents could be discovered if only we found a way of communication between them and entire world. The system approaches the interacting between the mute people and normal people, the system is consider as a trial, not only to reduce but actually to decay the gap between the mute people and the normal people and hence they can express their ideas. The aim of the system is to help the humanity to discover a new talents and ideas which will aid to increase the today's evolution. This system based on the common communication way which is the sign language, the main concept it to convert the sign language into a form to be readable or hearable for the normal people. The system is easy to use not only because it is a wearable system but also because it is easy to interface with and easy to be configured. All in all, the system attempt not to change the communication way of the mute people and also the communication way of the normal people, so the system facilitate the communication between them without any change of their communication way.

No		
		
54	**Project Title**	**Automated air pollution monitoring system**
	Students' Name	Walid Mohamed Ali Ahmed Mohamed Aboeissa
	Supervised by	Dr. Ahmed Diaa
	Abstract	Over the last decade, industrialization in Egypt have been expanding one step by another. These development resulted in a big number of challenges that we face now like pollution and other issues. One of the most harmful contamination issues is air pollution since it is colorless, tasteless and scentless. Industries are one of the main sources of air pollution in Egypt which affect human health. Obviously, Egypt is one of the most polluted country in the world. As informed by "Khaled Fahmy" minister of environment, due to the minimum number and high cost of continuous emission monitoring systems in industries, self-regulation are not well applied. Also, according to the EPI rankings, government have issues in well managing and monitoring pollution. Therefore, it has become a need to reduce the cost and effort of inspection in industries. Also, the environment ministry should be fortified to ensure that outflows from ventures is concurring with the stipulated pollutants emission standards. So, an air pollution monitoring system should be installed. The proposed device will be installed at the chimney of the factory itself. It will be based on microcontroller and sensors which detects concentration of various gases and parameters like CO, NO2, SO2, temperature and humidity. Then, emission data are transmitted to the existing data logger in form of digital serial data. Also, it will be stored in a secure cloud server and displayed on an online webpage. Finally, by employing the proposed system, self-observing and reporting emission data on a continuous basis will be exercised. This will serve as a data base which can be used for various analysis when required. Also, government will well control and manage regulations on the industry that don't follow the emission standards without the need of continuous inspection.

No		
55	**Project Title**	**Processing Weather Data using ThingSpeak Technology**
	Students' Name	Amro Mohamed AbdelFattah Mohamed Magdy Abdel-Raouf
	Supervised by	Dr. Ahmed Diaa
	Abstract	Nowadays, the need for accurate weather stations is at a rise, as the knowledge of current weather and the ability to forecast weather have become essential for everyday life, agriculture, and industries. To get a full coverage of the countries weather, multiple weather stations will need to be installed together over the surface of the land. Egypt's economic state does not accommodate the importing of goods from outside. In this thesis we investigate a cheaper and local solution that is readily available in local markets, and achieve necessary reading within an acceptable tolerance. After the assimilation of data, further analyzes will be made using an IoT platform that is powered by a technology which allows computational mathematics; giving the possibility to draw assumptions about the weather and hence forecast it. Using the IoT platform will also enhance our system by giving access to anyone in the public using the internet to our channel, so that our readings and forecast are visualized and viewed anytime and anywhere at real time for no cost.

Graduation Projects of the Academic year 2018-2019

No		
56	**Project Title**	**Feature selection to identify Arabic letters**
	Students' Name	Youssef Ehab Yasser Mohammed
	Supervised by	Dr. Ahmed Diaa
	Abstract	Arabic language is considered one of the major languages and it is one of the most widely used languages among the world. Despite that, it does not get enough attention from researchers as much as Latin and Japanese letters get in letter recognition. Arabic letters are more complicated compared to Latin and Japanese, we proposed a system to eliminate this problem. In this report, we proposed a system that focuses on recognition of separate handwritten Arabic letters based on feature selection and depending on Naïve Bayes and K-Nearest Neighbor for classification. The dataset used in this system is of our own creation, we collected images of computerized and handwritten Arabic letters, and we applied some modifications on them using linear transformation.

Industrial Systems Engineering (ISE)

Graduation Projects of the Academic year 2018-2019

No		
1	**Project Title**	**Virgin Olive Oil Extraction Machine**
	Students' Name	Ahmed Adel Abdel Fattah (122451), Emad Ahmed Bakr (123655), Mohamed Ali Eid Solama (143927), Islam Talal Yousif Saleh (126145)
	Supervised by	Dr. Ayman Abd el Bary , Dr. Ahmed Badawy
	Abstract	Olive oil industry is considered one of the food industries based on agricultural production to one of the most important horticultural crops in Sinai, within the Mediterranean basin environment. This project aims to analyze and deduce the possible ways to produce olive oil and manufacture the appropriate production line. The production line should satisfy a predetermined capacity and specific conditions. The work in this project is divided into three levels. Analyze each mechanism used and then compare between these mechanisms from points of views of their advantages and limitations. After evaluating each machine and collecting points of strength and weakness of them, the appropriate system is then chosen. The method that's satisfy the project problem and match with the capacity of resources is the one that project focus on. Finally, a proposed design of each machine is then determined. The proposed design depends on the required specifications for each and every manufactures in olive oil industry. As the production line is producing olive oil, it is important to assure that final product is safe for human usage. By the choice of specific materials for the parts in contact with the product and select a specific coating material accordingly.

Graduation Projects of the Academic year 2018-2019

No		
2	**Project Title**	**Design and Manufacturing of Olive Pitting Machine**
	Students' Name	Ramy Ahmed Salah Ibrahim (135249).
	Supervised by	Dr. Ayman Abd el Bary , Dr. Ahmed Badawy
	Abstract	The objective of this project is design and manufacturing of olive pitting machine, as investors explained their need for a pitting machine for a 60 Acre olive farm. The company's target is to extract pits from collected olive in high production rate. This project presents a proposed design of a hybrid of both rotary type and reciprocating type pitting machines. An electric powered pneumatic machine for pitting olives in which a CNC rotary indexing table carries olive in and out from the pitting process where a vertical pitting and extraction mechanism is placed on the vertical plane assembled with a pitting head that has multiple knives to induce the cut and extraction of the pits by punch, where linear reciprocating motion is produced by a pneumatic cylinder controlled by directional valves which in its turn controlled by microcontroller. This micro controller in its turn is responsible for the position and the number of steps exerted by the stepper motor that controls the rotary indexing table and therefore controls the alignment and timing of pitting knives and rotary indexing table which can be considered as the feed motion. This machine produces a small diameter vertical cylindrical cut resulting in accurate extraction while maintaining the remained undamaged.

Graduation Projects of the Academic year 2018-2019

No		
		
3	**Project Title**	**Design and Manufacturing of olive harvesting machine**
	Students' Name	Ahmed Abd El Nasser Ali (135639), Ibrahim Mostafa Mohamed (143029)
	Supervised by	Dr. Ayman Abd El Bary , Dr. Mohamed Hassan
	Abstract	Mechanical harvesting is increasingly being employed in the fruit removal industry because of the faster and efficient harvesting that it provides with lower cost when compared to manual harvesting, as manual harvesting is inefficient and labor intensive, thus very expensive. Technological developments and researches were made in order to improve the harvesting process; the results of these researches were focused on the mechanical and automatic harvesting systems. The results of researches overcame the manual harvesting system limitations and improved its efficiency. For fruit removal, vibration is the most effective method and it must be designed with a correct frequency and amplitude to avoid breaking of the tree branches. The objective of this project involves designing and manufacturing a branch shaking system that operates with an air compressor for harvesting of olives in an Egyptian olives farm. To achieve the best economic harvesting results, the harvesting efficiency will be analyzed as well as the damage effects on the tree, to adjust the best frequency and amplitude.

No		
		
4	**Project Title**	**Increasing the Utilization of Tissue Manufacturing Production Line**
	Students' Name	Majd Eddin Touma (140999), Ahmed Gamal Ali (131301)
	Supervised by	Prof. Dr. Nahed Sobhi , Dr. Sameh Ahmed Salah
	Abstract	The objective of this project is to implement the SMED analysis to the 38 changeover operations of Fabio Perini at Fine Company which is obtained in grad I, to create a new changeover matrix, and to use five different sequencing methods to the production line and find the best of them to be used in implementing the new production plan of the company. A computer program based on excel sheet will be made to computerize the creation of the production plan.

Graduation Projects of the Academic year 2018-2019

No		
		
5	**Project Title**	**Design and Manufacturing of a Machine for Palm-Midrib Conversion into Particleboard (Press Machine)**
	Students' Name	Abd El Rahman Hesham (144009) , Mohamed Helmy Sayed (143779), Atef Emad Abdel Tawab (144149)
	Supervised by	Prof. Dr. Mostafa Zaki
	Abstract	The Project aims to benefit from unused palm tree midrib to be used as a substitute for natural wood. The main objectives of this project is the production of sheets of particleboard with medium, raucous & fine particles. Enhancement of the produced particleboard sheets properties by adding water proof coating and protective films.A machine was designed & manufactured to produce the desired particles and a thermal press machine to press the particleboard producing desired particleboard sheets dimensions. The proposed solution aims to reduce the usage of midribs as waste, reduce the cost of imported wood & create a new platform for local industry by manufacturing of thermal pressed midrib particleboard sheets & manufacturing of laminated sheets. Mechanical & physical tests were performed on the produced particleboard sheets to determine the forces and temperature needed to design and manufacture the thermal press machine.

Graduation Projects of the Academic year 2018-2019

No		
		
6	**Project Title**	**Investigation of Slurry Erosion Behavior of Glass Fiber Polymer Reinforced Composites**
	Students' Name	Ahmed Atef Hassan (150637), Ahmed Nagi Radwan (152313).
	Supervised by	Dr. Yasmine Abdin
	Abstract	Investigation of erosion behavior of fiber reinforced composite (GRPs) materials is a significant research problem. Erosion wear is a major cause of failure of mechanical components especially in pipelines applications, such as the oil and gas industry, water transportation, industrial drainage, etc. The present work is undertaken to study the development, characterization and erosion wear performance of polyester resin reinforced with E-glass woven fiber. Focus will be on glass fiber reinforcements as the major type of fiber materials due to cost efficiency and high mechanical properties. In order to perform the desired study, first a detailed literature review was performed to investigate the different types of resins, reinforcement fibers, erosion test machines, and test conditions available for FRPs. Full design calculations, manufacturing steps and CAD drawing of the tester were performed to ensure the required functionality of tests Slurry erosion testing was chosen as the most relevant type of study for the above-mentioned applications. A slurry erosion tester was designed and manufactured this work to allow the investigation of the erosion behavior of chosen material using silica sand of 500µm as erodent at different impact angles 30, 45, 60 and 90 at constant test duration of 1.5 hours. Moreover; erosion test was performed at different distances between nozzle and tested material at 3, 6, 10, 12 cm with the same test duration. . Erosion test was performed on the samples at different impact velocity of 10,13,16,18,20 m/sec. Erosion test was performed in each parameter with repetition factor equals 4.

Graduation Projects of the Academic year 2018-2019

No		
		
7	**Project Title**	**Design and Manufacturing of Controlled Waste Segregation Machine**
	Students' Name	Ahmed hassan Abdelmoniem (150549), Philopateer Nabil Zaki Salama (153067).
	Supervised by	Dr. Mohamed Hassan , Dr. Sameh farid
	Abstract	Solid waste management has become one of the main issues in cities all over the world. Therefore, it is necessary to develop the means of sorting-out the content of domestic waste for reusing or recycling based on the type of waste material. Keeping in mind that under the condition of climate change and environmental effects,it is necessary required to recycle the waste, since mixing is rubbish while classifying is resource. The objectives of this project are to design and manufacture a small scale waste segregation machine to be used in the MSA university campus. Waste bins in the university campus were investigated and it was found that they include dry and clean waste and these are classified as rich waste to be segregated and then recycled, these rich wastes are paper, cans, glass and little ferrous pieces. The proposed design of an efficient machine will include mechanisms for picking different types of waste. Containing a hopper with a plate to control waste inlet. A blowing chamber to separate light waste from heavy waste. An overhead magnet to separate the ferrous metals from the rest of waste and a magnet fitted in the last end pulley to separate escaped ferrous metals from the rest of waste.

No		
		
8	**Project Title**	**Evaluation and Improvement of Sustainability in an Irrigation Pipes Plant**
	Students' Name	Abdallah Medhat Mohamed (152507), Mohanad Mohamed Ibrahim (155843).
	Supervised by	Prof. Dr. Nahed Sobhi , Prof. Dr. Ibrahim Garbie, Dr. Sameh Ahmed
	Abstract	In this project, the aim is to form a measuring model of sustainability in manufacturing enterprises which can be reliable for evaluating the performance of the enterprise. The focus of the research to reach this model was on social and environmental sustainability as firms usually direct more concern towards economic aspect of the sustainability. The proposed assessment framework was used to evaluate sustainability in a plastic irrigation pipes plant. It was found that the plant needs improvements in several aspects; first was filtration of water used in plastic washing tanks to reduce waste of water and improve environmental sustainability. Secondly, social sustainability can be improved through adding a safety shutdown mechanism for plastic shredding machine and proposing a ventilation system for plastic recycling department in addition to placing posters for work-related health and safety. The third aspect is related to economic sustainability regarding enterprise productivity which can be improved through upgrading perforator and insertion machines that formed bottlenecks for the production line. Finally, sustainability is re-evaluated in the selected enterprise to observe the changes created by the implemented solutions.

Graduation Projects of the Academic year 2018-2019

No		
		
9	**Project Title**	**Implementation of Total Productive Maintenance in Plastic Industries**
	Students' Name	Magdy Ahmed Lotfy Ibrahim (131083) , Mohamed Ayman Abdel Fattah (135791)
	Supervised by	Dr. Al Awadi Attia
	Abstract	Total Productive maintenance "TPM" is one of many other types of maintenance; where its target is to integrate equipment maintenance into the manufacturing process in order toi avoid machine's sudden breakdowns as much as possible. The word "Total" refers to total life cycle, pre-emptying losses of all types throughout the life cycle of the production system. Finally ity means total effectiveness judged by maximizing overall equipment effectiveness "OEE" performance measure. The objective of this project is to implement TPM to maximize the OEE, in order to do so the pillars of TPM are used to improve equipment effectiveness, achieve autonomous maintenance, train all the staff in relevant maintenance skills, and plan maintenance Appling TPM helps increase productivity and availability, reduce defects in products which leads to maximizing the OEE, since it is affected by these three main factors: productivity, availability and quality.

No		
		
10	**Project Title**	**Performance Improvement of Aluminum Profiles Painting Line.**
	Students' Name	Karim Hisham Abdel-Wahab Mohamed (152265), Moahmed NurHussien Shelebi (137173).
	Supervised by	Dr. Al Awadi Attia
	Abstract	Organizations are currently facing a challenge to respond rapidly to customer needs changing. To compete in this continuously changing environment, companies must seek out new methods allowing them to remain competitive and flexible by reducing their expenses lead- time. Such strategic objective can be attained by applying continuous improvement techniques. The project objectives is to increase the productivity of the company and also to reduce the waste of powder. One of the problems that we try to overcome is the old painting reciprocators which slows down the whole production line and it wastes too much powder waste. The second objective is to reduce the manufacturing costs of powder by providing different suppliers, the third objective is to reduce the setup time of change over time for the painting cabin by implementing SMED methodology, the fourth objective is to reduce the time spent for hanging the profiles in the hanging station and maximizing the utilization of the loads. This project will emphasize how the new reciprocators will increase the capacity of the production line to be above the breakeven point which is 4030 kg/day as the old production capacity is 2795 kg/day to 5670 kg/day. The time of changeover has also been reduced from 77 minutes to 66 minutes due to applying SMED. Reduction of powder waste from 14 kg to5 kg. Contracting with new suppliers to reduce the manufacturing costs where the company been using Akzo Nobel as their only supplier for powder coating with mean average price for the powder is 70 LE/Kg where Alwan company has less mean price which is 58 LE /kg while tiger company has a less mean average price than Alwan but, there is two days delay to be shipped from Tigers company to Al Arabia Company. Also the project will highlight the implementation of SMED methodology for the changeover where the changeover time. Recommendation for the painting station and to maximize the utilization of the hanging profile. The project also will control implementation of all these proposed approach by using control charts and also recommendation for the painting cabin.

Graduation Projects of the Academic year 2018-2019

No		
		
11	**Project Title**	**Implementing Industrial Engineering Concepts in Tourism in Egypt.**
	Students' Name	Mohamed Ossama Hamed (134539), Youssef Tarek Hamouda (154451).
	Supervised by	Dr.Ayman Abd El Bary
	Abstract	This project reviews the usage of Industrial Engineering practices in the tourism sector. The idea behind it is to establish a form of procedure used in Industrial Engineering in tourism, to improve the service itself. This project discusses four main topics; Operations Research, Quality Management, Facilities, as well as Risk Management, and how to implement them in tourism sector to increase the quality of tourism. The methodologies in this project include exponential smoothing, and seasonal with trend model for tourist forecasting which were chosen based on analysis on the data collected. A minimal spanning tree problem is discussed for transportation across Egypt used for creating a trip in cities such as: Cairo, Giza, Alexandria, Luxor, Aswan, Dahab, and Hurghada, minimising the cost and time of the trip. Furthermore, the project discusses how a questionnaire was created for services such as accommodation and transportation to measure customer satisfaction, and define the facilities needed to improve the service and the tourism experience. Lastly, the risk management process is discussed step by step in to ensure the safety of the tourist.

Graduation Projects of the Academic year 2018-2019

No		
		
12	**Project Title**	**Productivity Enhancement and Reducing cost in Sky Cola Soft Drink Factory**
	Students' Name	Bassel Ramadan Ahmed El Shafei (142275), Muhamed Fattouh Mohamed (143799).
	Supervised by	Prof.Dr. Nahed Sobhi , Dr. Sameh Salah
	Abstract	The project objective is to enhance the productivity in different aspects of (Sky Cola) and reducing the amount of wasted water that used to wash the plastic bottles, in a result minimizing the associated cost. One of the problems that affect the productivity is the changeover time, which has a high impact on the production line availability. The performance of the packaging machine is lower not only than its ideal performance state but also lower than the rest machines of the production line, resulting in a bottleneck. Implementing the SMED methodology (Single Minute Exchange of Die) reduced the changeover time by about 60%. In addition, the estimated implementing of adding an additional packaging machine increased the production rate from 101 to 123 bottles per minute. This modification was simulated through the ARENA simulation software to get the closest results to the real ones. Finally, reusing the rinsing water after a filtration cycle saved 42.85% of the water and increased the profit by 46.68% annually.

Graduation Projects of the Academic year 2018-2019

No		
13	**Project Title**	**Work Study Analysis on The Plastic Formation Department at Bahgat Group Factory.**
	Students' Name	Mona Abou Bakr Ibrahim (151277), Mohamed Emad Hussien Afifi (136421).
	Supervised by	Prof.Dr. Nahed Sobhi , Dr. Sameh Salah
	Abstract	The project objective is to make a work study analysis to determine the suitable incentive system in order to increase the employees' motivation in the plastic department in a refrigerator factory. All different types of products in the factory, and the production stages, and their different processes are identified. A time study for each process in the production line is achieved to determine the performance rating of the workers, calculate the normal time, determine the worker allowances, and finally calculate the standard times. Moreover, a motion study through tackling the motions of the workers at each process is conducted. A whole work study analysis is performed to eliminate the waste of time and motions in order to take a suitable decision concerning the incentive system.

No		
14	**Project Title**	**Inventory Control System in Armored Vehicles and Security Doors Factory.**
	Students' Name	Adham Amr Hassan Azzam(142525), Abdallah Rabie Mohamed (142727).
	Supervised by	Prof.Dr. Nahed Sobhi , Dr. Sameh Salah
	Abstract	The project's main aim is to establish an inventory Control System in Armored Vehicles and Door factory. The factory faces both out-of stock and overstock situations and lack of inventory control, which appears in missing of some important parts during production process. This project aims to establish an Inventory Control System through Defining economic order quantity for the most important items which is defined by making ABC classification for the items and then focus on items of A-class, Building up a software to make MRP plans, keep tracking for inventories, and storage optimization for the warehouse.

Graduation Projects of the Academic year 2018-2019

No		
		
15	**Project Title**	**Productivity Enhancement at Giza Factory for Cables Industry**
	Students' Name	Ismail Jehad Foudeh(137621), Nour El Din El sayed (136115).
	Supervised by	Prof.Dr. Nahed Sobhi , Dr. Sameh Salah
	Abstract	The objective of this project is to increase the productivity of the electrical cables factory to satisfy all customer orders. This project aims to implement lean tools to monitor all processes in the production line. This project focuses on using Pareto chart to find the priority of the specific product problem, also uses value stream mapping to monitor the production line and identify the location of bottleneck, use the line balancing to improve the productivity. In this project also we used the theory of constrains to find the optimum speed of sheathing machine to increase its productivity. This project implement single minute exchange of die methodology to decrease set up time of insulation machine.

No		
		
16	**Project Title**	**Enhancement of Economic Sustainability in Modern Irrigation Systems Factory.**
	Students' Name	Zyad Ashraf Mohamed (155429), Mohamed El Sayed Mohamed (150709).
	Supervised by	Prof.Dr. Nahed Sobhi , Dr. Sameh Salah
	Abstract	This thesis provides an assessment framework for measuring sustainability in manufacturing enterprises through developing indicators that can be utilize to quantify their achievements in sustainability. The proposed model is applied in modern irrigation system firm to evaluate its sustainability index and identify areas of improvement. There are three main issues that needed improvement to raise the level of sustainability in the firm. The first issue is increasing the material utilization by 6% through implementing six sigma methodology to reduce wall thickness variation of irrigation pipes. The second issue is increasing the time utilization by 80% through implementing Single Minute Exchange of Die (SMED) technique to reduce nonvalue-added time during changeover of extrusion die. The third issue is raising the power efficiency by 40% through upgrading the Mica band heaters with Infrared heaters. Finally, revaluating the sustainability index of the firm and comparing it with old one for monitoring the level of sustainability along time to ensure the continuous improvement.