



Department: **Computer Science And Software Engineering**

Student Support Dialogue System

Main presenter: **Mariam Ahmed Saeed Saif Al Shamsi**

Supervisor: **Dr. Hanan Ibrahim AlDarmaki**

Co-presenters: **Entesar Qasem Alawthali Amel Ali Al Zubaidi Fatmah Rashed Mohamed Alhefeiti**

Abstract: Students ask advisors and instructors many questions via email, many of which are repeated questions where the answer is available on the university website, blackboard, or answered previously to other students. This leads to an overload of emails to instructors and advisors, and this added work is unproductive and unnecessary. To make this process more efficient, we propose to implement a chatbot that is equipped to answer frequently asked questions, in addition to being regularly updated when new questions are asked and answered. We will develop a web application chatbot to guide students in the university using various new technologies and methods. The chatbot will have the ability to answer any student's questions within the university and out. Sentimental and out of topic questions will be answered through a pre-trained AI chatbot, whereas a rule-based chatbot will be developed to answer questions about the university or a particular course the student is enrolled in. It will be consistently updated through an interface that notifies instructors of new questions that do not yet have an answer in the chatbot. As a result, future questions about the same subject will be answered automatically through the chatbot, which would lessen unnecessary email exchanges.



Department: **Computer Science**

Dropparcel : Smart System For Secure Parcel Delivery

Main presenter: **Maryam Mohamed Buty Alghfeli**

Supervisor: **Dr. Parag Kulkarni**

Co-presenters: **Nouf Safwan Alsebaiha Meera Mohamed Alnuaimi Shamsah Naser Alnuaimi**

Abstract: Online shopping has been a very popular activity that people enjoy. However, there are some obstacles in the process of receiving the parcels, because the customers must be present to receive them. Throughout our research process, we noticed the lack of solutions given. Therefore, we have developed a system that stores the parcel securely and would eliminate the need to be present to receive the parcel, which will make the customer's experience smoother. Our system includes a smart lockbox and a mobile application. Generally, the shipping label printed on the parcel has a QR-Code that holds the tracking number of the parcel, the access to the lockbox is based on scanning this QR-code. Initially, the customer will add the tracking number of his/her parcel by the mobile application. The tracking number will be stored in the database. When the courier reaches the customer's address, he will find the lockbox on the front porch, then he will scan the QR-code by the lockbox camera. The lockbox will unlock if the tracking number was stored in the database otherwise, it will remain locked. The mobile application has many other features. After testing the system, all the test cases met the expected results.



Department: **Information Security - Computer Science-Computer Engineering**

Embedded Face Recognition And Object Tracking-Based Class Attendance And Social Distancing System Using Deep Learning

Main presenter: **Asma Ateeq Almheiri**

Supervisor: **Dr. Munkjargal Gochoo**

Co-presenters: **Salma Saeed Alkhyeli Asma Ebrahim Alblooshi Fatima Khamis Alshamsi**

Abstract: In the current pandemic condition, social distancing is one of the most important protective tactics. Apart from the public places, the educational institutions such as schools and universities, need to automate the monitoring of the social distancing among the students. Furthermore, the traditional attendance system is a manual system that is time, resource consuming and is more prone to errors.

In this project, we propose a solution to a specific clothing condition in the Gulf region where women have veils covering their faces. Moreover, nowadays people have masks covering their faces due to the pandemic Covid-19. This research provides a method for training users based on their traditional clothes and recognizing them not only by their faces but also by their walking patterns, height, and weight. In this project, we leverage the capabilities of the face and walking pattern recognition systems, which enables the automatic attendance of the students. This system will also facilitate in determining the social distancing among the students, by setting an alert to monitor social distance between them.

Our system is incredibly user-friendly and practical at the university level. This technology saves time, is simple to operate, and is reliable.



Department: **Information Security**

A Motor-Mouth Brain: Translation Of Brain Signals Into Motion And Audible Sound

Main presenter: **Khalil Ibrahim Hasan Alblooshi**

Supervisor: **Dr. Abdelkader Nasreddine Belkacem**

Co-presenters:

Abstract: People with speech or hearing disabilities face significant difficulties when it comes to communicating with others. Our system aims to tackle the impairment this group suffers from by enabling them to communicate via an intermediate robot, as well as to print speech intended to them so that they able to read it if they have hearing impairments. P300-based BCI modality was used to control a human-like robot in real-time. Icons selected by BCI users were mapped into meaningful speech performed by the robot. The procedures were carried out by installing eight electrodes on top of the user's skull to read the electroencephalogram in eight channels, wherein captured data were processed then fed to an adaptive learning machine to be learned, and lastly translated into commands. Instructions were sent to a robot to execute them whether they are movements or voice commands. Findings demonstrated a high accuracy rate in performing the orders users intended. Owing to this, it grants people the chance to benefit by sending the robot to present them in meetings or conferences, while people with the mentioned impairments will get the opportunity to communicate with others and dispense with learning the sign language which often causes challenges.



Department: **Computer Science**

Salamaty - A School Bus Monitoring System

Main presenter: **Sara Khaled Alshamsi**

Supervisor: **Dr. Mamoun Awad**

Co-presenters: **Noora Al Hammadi Fatma Alshehhi Leen Alataibi**

Abstract: In this research, the current school bus attendance system in the UAE was examined to identify the current problems parents face. Approximately 3,754 school buses clog the streets of the UAE every day, five days a week. In numerous cases, students have been left on buses for several hours with no supervision and forgotten about. Although apps such as GEMS and BusSchoolNet have been developed to track school bus attendance, most students still use a manual system or a card that is easily forgotten. The method used in the research was a survey conducted with 153 parents that revealed that 83.7% of students do not use tracking software, causing several problems, such as 60 % of students missing classes or arriving late for classes. As an action made toward this study, we developed an app that will solve the current problems associated with bus attendance in UAE schools. Salamaty is an android app that provides services for both parents and bus drivers. The developed software uses facial recognition to mark students' presence, allowing parents to track their children's movements and the bus to get the most efficient route by generating it.



Department: **Information Systems And Security**

Safe: Cryptographic Algorithms And Security Principles Gamification

Main presenter: **Wadha Harran Al Ketbi**

Supervisor: **Dr. Saed Al Rabaee**

Co-presenters: **Latifa Al Kaabi Aysha Al Koori Maitha Al Shamsi**

Abstract: The COVID-19 pandemic has caused dramatic changes in our daily lives. Shifting from on-site to online studying and working have lead to an increase in cyber-attacks. Several users have been victims of those attacks without knowing or did not know how to respond to them. There are many cyber-security awareness initiatives; however, they do not seem impactful as victims increase. Unfortunately, these initiatives use traditional education methodology that is considered insufficient nowadays due to the significant growth in technology. Digital native students who came to the world having technology all around them find learning strategies unattractive and disengaging. Hence, staying connected with technology development and changing learning methodologies accordingly is essential. Our paper gives an overview of the solution being developed that consists of a cyber-security educational game including 11 levels. Each level goes over a certain topic, in which players will not be able to pass the level unless they have a specific score of competence in the designated topic. Our project aims to provide a gamified interactive learning experience that educates, develops, enhances creativity and decision-making skills in the field of Information Security.



Department: **Information Systems And Security**

New Modulo Multiplicative Algorithm

Main presenter: **Farah Ayyad**

Supervisor: **Dr. Yousef Al Hammadi**

Co-presenters:

Abstract: The modulo operation returns the remainder of the division of two values. Additionally, given two integer values a and b , the modular multiplicative inverse of $a \pmod{b}$ is a value a^{-1} such that $a \cdot a^{-1} = 1 \pmod{b}$. There exist numerous ways to calculate a^{-1} such as the Extended Euclidean Algorithm, Recursive Multiplications, and Euler's Phi Function. After conducting literature reviews, we propose a new enhanced method to calculate the modular multiplicative inverse in such a way that is more conventional and efficient in regard to time and effort compared with Extended Euclidean Algorithm. The methodology utilizes linear congruence, which is the process of finding an integer x that satisfies the equation $ax = b \pmod{n}$. In the special case that $b=1$, x becomes the inverse of a . Thus, finding the multiplicative inverse of a becomes a matter of solving the equation. Steps to solve the equation are partially derived from the subtraction, multiplication, and division properties used in solving traditional algebraic linear equations of number theory. Briefly, many cryptographic algorithms, such as RSA algorithm, rely on the calculations of modular multiplicative inverses to generate public and private key.