

Graduation Projects 2023 - Al-Azhar University

Systems and Computer Engineering Department

1 Designing a general Framework for Physics Virtual Labs

Supervisor

Professor: Shehab Gamal El-din

Abstract: Designing a system that gives the teachers the ability to design any physics experiment by using a specific experiment description visual/script language. Then building an VR/AR engine that allows the students to run the experiment interactively.

2 Designing a general Framework for Chemistry Virtual Labs

Supervisor

Professor: Shehab Gamal El-din

Abstract: Designing a system that gives the teachers the ability to design any Chemistry experiment by using a specific experiment description visual/script language. Then building an VR/AR engine that allows the students to run the experiment interactively.

3 Generic Framework for Digital Circuits simulators

Supervisor

Professor: Shehab Gamal El-din

Abstract: Designing a generic software framework for simulating digital circuits. In this framework, digital components will be defined, which will be then used integrated to compose a digital circuit. This project can be used for designing the lab experiments for our department's students.

4 Automatic Student Attendance System Using Face Recognition

Supervisor

Dr: Gamal Tharwat

Abstract: The objectives of the project are:

1. Detection of unique face image amidst the other natural components such as walls, backgrounds etc.
2. Extraction of unique characteristic features of a face useful for face recognition.
3. Detection of faces amongst other face characters such as beard, spectacles etc.
4. Effective recognition of unique faces in a crowd (individual recognition in crowd).
5. Automated update in the database without human intervention.

5 Hand Recognition Using Palm and Hand Geometry Features

Supervisor

Dr: Gamal Tharwat

Abstract: The aim of this project is to combine palm print and hand geometry feature to achieve accuracy and high performance.

6 Automatic attendance system

Supervisor

Dr: Ali Halawa

Abstract: Web-based attendance system for the faculty of engineering. the attendance is taken daily base on the academic table for each class. the attendance report are sent to the student , instructor , and the student affairs to follow the student attendance and take the proper action.

7 Smart campus project

Supervisor

Dr: Ali Halawa

Abstract: A smart campus uses advanced network infrastructure and internet-connected devices to provide supportive and engaging experiences. It joins people, devices, and applications and allows universities to make insight-driven decisions to improve security and maximize resources.

8 Weather app

Supervisor

Dr: Khalil Mohamed

Abstract: An Android application For Weather Which deals with most of the topics and services in the Android operating system such as :

1. How the program communicates with the Internet
2. Deal with a specific API and deal with the files of the JSON
3. How to extract specific data from it
4. multithreading and parallelism to deal with many functions of the application at the same time
5. how to store data locally for viewing when the Internet is disconnected from the application.

- A website for the educational purpose Which explain :

1. How to do a model for the project.
2. How to manage the project (by Jira software tool based on agile process).
3. The code of weather application and everything related in the application.

- Upload the website on cloud (dealing with Microsoft AZURE , virtualization handling and IIS server).

9 Decision making of autonomous vehicles in lane change scenarios

Supervisor

Dr: Khalil Mohamed

Abstract: Driving safety is the most important element that needs to be considered for autonomous vehicles (AVs). To ensure driving safety, we proposed a lane change decision-making framework based on deep reinforcement learning to find a risk-aware driving decision strategy with the minimum expected risk for autonomous driving. Firstly, a probabilistic-model based risk assessment method was proposed to assess the driving risk using position uncertainty and distance-based safety metrics. Then, a risk aware decision making algorithm was proposed to find a strategy with the minimum expected risk using deep reinforcement learning.

10 FPGA based homomorphic encryption system

Supervisor

Dr: Khalil Mohamed

Abstract: Homomorphic encryption is a form of encryption that permits users to perform computations on its encrypted data without first decrypting it. These resulting computations are left in an encrypted form which, when decrypted, result in an identical output to that produced had the operations been performed on the unencrypted data. Homomorphic encryption can be used for privacy-preserving outsourced storage and computation. This allows data to be encrypted and out-sourced to commercial cloud environments for processing, all while encrypted.

11 housing rental

Supervisor

Dr: Khalil Mohamed

Abstract: the main Ideas to execute our Graduation Project As a Web and Mobile Applications That cares about the students and all who search for apartment rental Registration

As a tenant, I'm able to :

- Choose if I am a student or not
- If I am a student I can write info like (name, University - faculty - location of university) to help me more to find appropriate place
- Add email and verify it

As an Owner, I'm able to :

- Add contact Details including (identity number - identity images) to make sure every owner will not create more than one account
- Add email and verify it. House

As an Owner, I'm able to :

- CRUD my (apartment - shared apartment - private room) to the
- website including the details like (description - price - location - near places - Number of rooms - Number of beds - all needs that exist like a refrigerator and Furnished Apartments Or not - images - city - is Active)
- Choose if it is for just family or not, and choose if it fits the student
- Make the Advertisement unActive
- If Furnished (answer to questions about the furnishings)

If it is for students

- Show the maximum number of people who can exist in the flat
- Choose if the flat has no people in it or has like 1 student and needs two (This is handled auto by choosing a shared apartment)
- Read apartment details

As an owner

- I am able to get my apartments even it's unactive
- Also I can rent houses of other owners as ordinary user can do

As a tenant, I'm able to get Apartments and Read apartment

As a user

- I am able to get All Apartments and get any Owner's Apartment
- Search by writing place
- Filter by price
- Chat with the owner
- Evaluate the owner and add a comment to rate him
- show the ratings of the owner including comments and add comments to tell something for other users that apartment is not good in price
- Show the owner's profile and show apartment comments Community

As a tenant and Owner, I'm able to :

- Create a group like (Azhar students group) to show flats or show that flats require two students
- Join group to show its posts in home page
- Add new post to request to rent flat
- Search for post in (All DB OR all joined groups)
- Search for posts in a specific group
- Reply to another tenant to show them flats I tried before
- The owner Search for posts using filters

- Add post type filter (Advertisement, Question, trial)
- Filter posts by post type
- Reply to the post
- Home page shows the most recent posts in all joined Groups

As a Group admin, I'm able to remove any post in the group Waiting List

As a tenant, I'm able to :

- Choose that I need like 2 students until a specific time to be able to rent a specific flat
- The number of needs mustn't skip the maximum number shown by the owner
- the type of students that can show that I am waiting, like if there in specific faculty
- Show another student or tenant waiting List and choose if I am ready in one of them
- The student can chat in a group to rent the flat finally