ADHAM HAGGAG

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- **Drive**: Projects' Documentation

BIOGRAPHY

Electronics and Communication Engineer with a strong background **Embedded Systems** and **Software Engineering.** Possessing excellent skills in programming languages like C++, Python, and MATLAB. Skilled problem-solver and competitive programmer, and my experience has included developing and testing electronic circuits, implementing firmware for embedded systems, programming applications. **Passionate** about applying my expertise in **software development** and **embedded systems** implementation.

EDUCATION

Nile University, School of Engineering and Applied Science   **Giza, Egypt**

B*achelor of Science in Engineering*: Electronics and Communication Engineering (ECE)   *Sep 2019 - June 2023*

Cumulative GPA: **3.9/4.00 - (**Highest Honors) - **Ranked 1st** on department.

➔ **Full Merit Scholarship**
➔ **President's Honor List (For students with GPA 4/4)**

Riga Technical University, School of Engineering and Applied Science   **Riga, Latvia**

B*achelor of Science in Engineering*: Telecommunication and Electronics Engineering   *Feb 2022 - June 2022*

As an exchange student with a **full scholarship** funded by **Erasmus+** for the **top 7** excellent students on the whole Engineering Faculty of Nile University and the **top student** from electronics and communications department.

TECHNICAL EXPERIENCE

Researcher and Teaching Assistant, American University in Cairo (AUC)   **Aug 2023 – Present**

- Worked as part of a team under the leadership of Dr. Yehea Ismail to conduct research for the Center of Nanoelectronics and Devices (CND).
- Collaborated with the software team for the Egyptian American startup "Suitera EDA" tool, applying my software knowledge to work on the tool source code **(written in C++).**
- Executed software interfacing for a biometric sensor as part of applied research at the center, integrating real time communication with a database-processing server.
- Contributed to the designing and preparing training materials for Analog Track in the Egyptian Initiative "Egypt Makes Electronics (EME)" and offered the practical labs in person at the AUC's hubs in **Analog IC** track.

Junior Teaching Assistant, Nile University (NU)   **Sep 2020 – Feb 2023**

- Supervised and taught the following courses: MATH205/203 (Differential Equations), and ECEN 101 (Electric circuits)
- Prepared and offered more than 20 sessions for students, starting from the programming basics to advanced topics, using MATLAB and Simulink.
- Supervising more than 200 students in their course projects and handle the technical obstacles facing them with codes and hardware.

PROJECTS

Detecting Sleeping Cells in Cellular Networks Based on Deep Learning / Graduation Project   **2022- 2023**

- Worked under the supervision of Orange Skill Center with the R&D team to help in providing the required data for implementation and testing.
- Deployed of a classic **Machine Learning (ML) model** using One-Class Support Vector Machines (OCSVM), and a Deep Learning model using Deep Autoencoders
- The project aims to detect the sleeping cells problem facing the Egyptian mobile operator "Orange", depending on the accessible KPIs by the operator.

- The performance of both models was compared, proving that the ML model using OCSVM was better for the data in small scale. However, for large-scale stream, Autoencoders Deep learning model were more suitable and effective.

[Linux Embedded Microclimate Control System for Greenhouses](#)   **2022- 2023**
- Implemented a climate closed control system taking actions as an application for IoT technology through processing the data out from the temperature, humidity, gas, and water level sensors using **Linux OS** on a **RapsberryPi 3+**.
- Created a **mobile application** and a **website** for the user's interaction and control.
- Used firebase for implementation of the mobile application and website to save data on a live and efficient database server.

4X4 Multiplier Electronic Design Using Cadence Virtuoso   **2023**
- Designed a multiplier for multiplying two inputs each of 4 bits using Booth algorithm of multiplication.
- The design used CMOS technology and included the design of all the logic gates, half and full adders, multiplexer, decoder and 2's complement.
- The complete design was composed from about 4000 transistors distributed over the different components and after that all the components were connected achieving the function of the 4x4 multiplier.

[Organizations' smart security using Deep Learning](#)   **2021-2022**
- Deployed a Machine Learning model using OpenCV sing data of organization's authorised members to be used as a security system for organizations.
- Implemented a mobile app and linked it with the system, from the ML model and the controller, using firebase to collect data, send notifications, and control the actuators.

LEADERSHIP ACTIVITIES

Instructor at NUICPC Community, Nile University   **Oct 2021 - Aug 2022**

- Making technical academy for university students to teach them problem-solving techniques conducting 10 sessions / semester in problem solving.
- Mentoring all the students' groups in practicing the advanced level problems by solving an average of 5 problems/session.

Instructor at Google developer student club (GDSCNU), Nile University   **Sep 2021 – Sep 2022**
- Successfully conducting more than 15 technical sessions in Machine learning, IoT, embedded systems, and C Programming language for university students.
- Mentoring the university projects to participate the global solution challenge.

TECHNICAL SKILLS
- Skills: Python, Embedded C/C++, Artificial Intelligence, Computer Vision, C#, OOP, SQL, .NET Framework
- Tools: MATLAB, Arduino, Simulink, Proteus, LTSpice, Cadence Virtuoso, Multisim, Cisco Packet Tracer, CCStudio

COURSES
- **[Python for Data Science, AI & Development](#)**, Coursera   **Apr 2023**
- **[Introduction to Artificial Intelligence (AI)](#)**, Coursera   **Nov 2022**
- **[CCNA V7](#)**, NTI   **Sep 2021**

ACHIEVEMENTS
- **[First Place at the 9th and 15th Undergraduate Research Forum](#)** , Nile University   **2019 & 2023**
- **[Second Place at the 13th and 16th Undergraduate Research Forum](#)** , Nile University   **2022 & 2023**
- **Participated multiple times at local ICPC qualifications.**   **2020 - 2022**
- **Honoured at Electrical Engineering Fair at ACU,** Ahram Canadian University   **2019**