Mohammed Zaieda

Email: m.zaieda@gmail.com
Portfolio: mzaieda.com
Mobile: +20-155-4237-878
Github: github.com/mzaieda

Education

- **The American University in Cairo** — New Cairo, Egypt
  Bachelor of Science - Computer Engineering and Mathematics; GPA: 3.78 — *Sep. 2018 - May 2023*
  CE courses: *Operating Systems, Analysis Of Algorithms, Deep Learning, Machine Learning, Networking, Distributed Systems*
  Math courses: *Modern Algebra, Stochastic Processes, Multivariate Analysis, Linear Algebra, Discrete Math*
  Math Thesis: A Path to the Fundamental Theorem of Algebra - Grade: A
  Computer Engineering Thesis: GPU Accelarated Dataflow Analysis - Grade: A
- **University of Cambridge** — Cambridge, UK
  International Security and Intelligence (ISI) Program; Grade: B+ — *Jun. 2021 - July 2021*

Skills Summary

- **Languages**: Python, C/C++, Verilog
- **Frameworks**: Scikit, TensorFlow, Keras, Django, Flutter, ReactJS
- **Tools**: MongoDB, Docker, GIT, MySQL
- **Platforms**: Linux, Windows, Azure
- **Soft Skills**: Critical Thinking, Leadership, Teamwork, Public Speaking, Time Management

Experience

- **Blnk** — Sheikh Zayed, Egyp
  Software Developer (Part-time) — *Oct. 2021 - Dec. 2021*
  - **Django Backend Loan System**: Developed a loan management system using Django as the backend technology.
  - **MongoDB Query Hosting**: Designed a database model for query optimization and efficiency.
  - **ReactJS Admin Panel**: Developed an admin panel to monitor transactions using ReactJS.
- **Openware Information Systems Consulting Company** — Kuwait City, Kuwait
  Software Developer (Internship) — *Jun. 2021 - Aug. 2021*
  - **ReactJS Weather App**: Developed a responsive weather application using ReactJS.
  - **NodeJS Weather API**: Hosted NodeJS backend server on premise to retrieve weather reports from API.

Projects

- **Computer Architecture - Direct Map Cache Simulator (C++)**: I designed and developed a tool to simulate the number of total misses and hits of a direct map cache system. Simulated accurate estimates of total clock cycles, number of memory accesses, and writes. To achieve this, I implemented algorithms that handled misses and hits to sync with the necessary clock cycles.
- **Operating Systems - Redundant Fork for Fault Tolerance (C/C++)**: I designed and implemented a new system call called pfork that enabled the creation of two children processes, one marked as runnable and the other as standby, for fault tolerance purposes. I modified the Linux kernel's core.c, sched.h, fork.c, and exit.c files to support pfork and added attributes to the process control block such as pfork status and pfork process ID. To ensure successful implementation, I compiled the Linux kernel on a Debian-based virtual machine and tested the implementation.
- **Deep Learning - Abstractive Text Summarization (Python)**: I leveraged Google's pre-trained transformer model, Pegasus-large, to perform abstractive text summarization. I applied two types of data augmentation techniques to the XSum dataset and changed the word embedding algorithm to Word2Vec instead of positional sinusoidal embedding. I also performed extensive hyperparameter tuning to optimize model performance.
- **Embedded Systems - COVID 19 Crowd Management System (C/C++)**: Developed a COVID-19 Crowd Management System to control the number of people in large premises. Built an embedded system using STM32 Nucleo board and multiple sensors to detect the number of people entering and leaving the premises. I implemented an ESP32 module and integrated with ThingESP APIs to create a WhatsApp bot that informs users about the current occupancy of the premises
- **Machine Learning - Gender Voice Recognition (Python)**: I utilized a range of Python frameworks, including TensorFlow, NumPy, Pandas, Librosa, and Keras, to identify the gender of a speaker. To improve accuracy, I created H5 models for the weighted prediction of signal processing and broke down the specifications of each .wav file, measuring the natural frequency of the audio.

Certifications

- Certified Azure Fundamentals (AZ-900) - Mar., 2023
- Certified Ethical Hacker (zSecurity) - Dec., 2020

Extracurricular Experience

- **IEEE AUC Student Branch Chairman** — New Cairo, Egypt
  Organized and hosted a Cyber Security event featuring Eng. Bahaa Othman. — *Aug. 2021 - Dec. 2021*
- **AUC Student Union General Manager** — New Cairo, Egypt
  Created admin panels for the SU packs and the SU market using outsystems. — *Aug. 2021 - Jan. 2022*