MOHAMED KHALIL BRIK

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Education

- Bachelor of Science in Computer Science, The American University in Cairo, GPA: 3.797 **(September 2022- June 2026)**
  Analysis & Design of Algorithms | Python Programming | Software Engineering | Quantum Computing | Discrete Math
  Linear Algebra | Probability | Statistics | Computer Architecture
- Semester Abroad, College of Charleston (USA), GPA: 3.9 **(January 2025- May 2025)**
  Data Mining, Database Systems, Machine Learning, Deep Learning, Large Language Models, Computer Vision, Statistics

EXPERIENCE

Machine Learning Researcher, College of Charleston **(January 2025 - May 2025)**
Charleston, South Carolina, USA

- Implemented an LLM-assisted framework using **Python**, **GPT-4**, and few-shot prompting to semantically cluster student peer feedback and improve coherence in formative assessment.
- Conducted quantitative evaluation with **scikit-learn** to measure GPT-human clustering agreement.
- Visualised persuasion score distributions and keyword relevance using **pandas**, **Seaborn**, and **Matplotlib.**
- Proposed an AI-powered feedback **recommender** system leveraging semantic similarity, transformer embeddings, and real-time reviewer support for scalable peer assessment systems.

Student Scientist, NASA, College of Charleston, University of Alabama in Huntsville **(January 2025 - May 2025)**
Huntsville, Alabama, USA

- Collaborated with **NASA** scientists and interdisciplinary student teams to design ATLAS, a full-scale mission concept to Saturn's moon Titan, focusing on astrobiology and planetary evolution.
- Applied **data science** principles to model atmospheric dynamics, material transfer between moons, and surface changes using spectrometry and imaging datasets.
- Delivered a final mission proposal and scientific presentation to a panel of NASA engineers and mission planners

LLM Researcher, Computer Science Department, The American University in Cairo **(August 2024 - December 2024)**
Supervised by Dr. Sherif G. Aly and Dr. Amr El Mougy

- Developing an **LLM** to analyze 911 **call texts**, **classify** type of emergencies, **identify** emergency address, **prioritize** of response levels and give **recommendations** to human operator to enhance operational efficiency.
- Integrating **age** recognition from **voice** inputs to tailor LLM recommendations for human operators, facilitating age-appropriate communication strategies during emergency calls.
- Drafting a **first of its kind** comprehensive **manual** for the LLM's operational guidelines, ensuring alignment with best practices established by official organizations managing 911 services.

Information Security Intern , Abu Dhabi Islamic Bank **(July 2024 - August 2024)**
Cairo, Egypt

- Received training in Ethical Hacking, Network Security, Identity Access Management (IAM), and Threat Intelligence.
- Developed a **Django**-based software that automated IAM tasks, increasing team efficiency by **60%**. [Project Link]
- Developed a script for data leakage detection through emails by employees using AI.
- Collected a list of **700,000** IP addresses using **Beautiful Soup** used in malicious activities that the bank blocked.
- Presented cybersecurity attack simulations and mitigation strategies to the Chief Information Officer.

Software Engineering Intern, American University in Cairo, Library Website **(June 2024 - July 2024)**
Cairo, Egypt

- Developed and implemented a comprehensive system to identify overlaps between AUC's **500,000** printed books and electronic collections on platforms like HathiTrust and Open Library using their APIs using **Python**, and **Pandas**.
- Collected and compiled relevant data, including view links and **MARC XML** records, into structured Excel sheets to support the library team's efforts in enhancing digital access to the collection.

Chat Bot Development Intern, DiaspÜra **(January 2024 - June 2024)**
Remote (Business Located in France)

- Developed an **NLP** chatbot with a user-friendly **interface** to guide individuals relocating through the immigration process, assisting with legal, documentation, cultural, logistics, and financial matters.
- Implemented **web scraping** techniques to gather information from official sources, training our bot to provide accurate and up-to-date answers to immigration inquiries.
- Contributed to the ongoing development of DiaspÜra's platform.

SKILLS

Tech Skills: Python | C | C++ | JavaScript | HTML | CSS | Verilog | Assembly | DevOps | SQL | Django | React | Bootstrap | Node.js | Scikit-Learn | Pandas | Matplotlib | Numpy | Seaborn | Beautiful Soup | Linux | Scripting | Git/GitHub | OOP

Languages: English (C1) | French (B2) | German (A2) | Italian (A1) | Arabic (Native)

PROJECTS

DigiMed : All in one Healthcare Management System (Software Engineering Course)

- Architected a healthcare management platform utilizing **Microservices** Architecture integrating systems like Patient Management, Doctor Management, Appointment Management, and Emergency Response using **RESTful APIs**.
- Designed functionalities, including a doctor search , appointment scheduling, online medical record updates, real-time appointment reminders, and the ability to manage online prescriptions, enhancing patient engagement and convenience.
- Used **Node.js** for backend development, **MySQL** for database management, and **React** for a dynamic front-end interface, **Stripe** for payments, **OAuth 2.0** for authentication.

Data Science Projects (Kaggle Website)

- Developed and published data science projects using **Python, Pandas, Matplotlib,** and **Scikit-learn**.
- Developed a notable project, "Coronavirus (COVID-19) Visualization", with over **2,500** views, converting raw data into visual tools aiding epidemiologists in understanding the virus's spread.

Map Timeline of History (Applied Data Structures Course)

- Developed a **Python** application using **Matplotlib** to visualize global civilizations in any given year on a map.

Central Processing Unit Design (Computer Architecture Course)

- Designed and implemented a fully functioning CPU architecture using **Verilog**, incorporating key components such as the ALU, control unit, memory management, and caching mechanisms to optimize performance,

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EXTRACURRICULAR ACTIVITIES

Student Ambassador, *American University in Cairo* **(September 2023 - Present)**

- Led engaging and informative **15** tours for prospective students, showcasing the dynamic campus life and facilities.
- Acted as a crucial liaison between the student body and the Dean of Students. Played a pivotal role in introducing new faculty and Board of Trustees members to the university community.

Chair of Academics, *The Computer Science and Engineering Association* **(September 2024- Present)**

- Designed and implemented **5** training programs on Machine Learning, Competitive Programming, Quantum Computing, and Software Engineering in collaboration with industry specialists from top tech Companies.

Teacher, *3alRaseef Club* **(August 2023 - Present)**

- Address educational needs of underprivileged children, homeless youth, and immigrants to Egypt.
- Impart coding and fundamental tech skills during weekly orphanage visits for **8 weeks**.

Treasurer, *The Open-Source Club* (September 2022 - August 2024)

- Engage in a club advocating open software, cybersecurity, and OS development.
- Effectively managed a club budget of up to **100,000 EGP**, ensuring optimal allocation and utilization of funds.

Member, Google Development Student Club **(September 2022 - August 2024)**

- Focus on Google developer technologies and foster collaboration among students.
- Participated in organizing a mega event, "TeqFest," which aimed to introduce quantum computing to university students.

Member, AUC Robotics Club - Training & Competitions **(August 2022 - June 2024)**

- Completed First-level Robotics Training with **Arduino**.
- Secured second place in the competition with our project: "A Path Follower Robot Car."

Conferences

- **National Conference on Undergraduate Research (NCUR), Pittsburgh, Pennsylvania, USA — April 2025**
  Poster Presentation: *Using Large Language Models to Enhance Emergency Response Systems.*

LEADERSHIP & AWARDS

Scholar, US Department of State - Tomorrow's Leaders Scholarship Program

- Awarded from **1,000** Tunisian students the prestigious Tomorrow's Leaders Undergraduate Scholarship.
- Engaged in developmental programs focusing on community service, leadership, and civic responsibility.

Winner, IOWA State University - INNOVATION FELLOWS IN TRAINING (I-FIT)

- Led the idea and coding for an application focused on cybersecurity, addressing pertinent societal concerns.
- Awarded the **second** place by the Department of Computer Science.