Islam M. Tayeb

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EDUCATION

Duke University   *Durham, NC*
B.S. in Computer Science, Minors in Bioinformatics & Chemistry   *Expected 2027*
Relevant Coursework: Data Structures and Algorithms, Computer Architecture, Linear Algebra, Organic Chemistry

EXPERIENCE

Research Analyst – Duke Institute for Health Innovation   *Jun 2024 – Aug 2024*
- Developed an LLM agent using **AutoGen** and **Llamma** to compile research paper databases and create literature reviews on user-selected topics, funded by the *Health AI Partnership*
- Building a multimodal deep learning predictive model for hospital-acquired thrombosis to be utilized by *Duke Health*
- Implemented solutions for backend problems in internal products, improving performance speed by 5-15% for each

Software Engineering Intern – Project: Sapien   *Dec 2023 – Jan 2024*
- Created full-stack semantic analysis tools using **BERT**-based models to help population health scientists extract structured data from unstructured surveys
- Led data collection for pilot tests, coordinating with faculty and surveying 4,000+ students to create a diverse dataset

Research Assistant – King Fahd University of Petroleum & Minerals   *Jul 2022 – Sep 2023*
- Created a **GC Monte Carlo simulation** statistical model, predicting 6 properties of 3 novel CO_2-capturing materials
- Developed phloroglucinol polymers and MOF analogues for direct CO_2 and H_2O capture for 2 *Saudi Aramco* projects
- Assisted with composing a proposal for computationally-predicted materials to a board of *Saudi Aramco* managers

Research Assistant – King Abdulaziz University   *Aug 2021 – Jun 2022*
- Utilized **ANOVA** algorithms and **Nextflow** to measure genetic variation and phylogeny of 5 Capparis species
- Analyzed needle biopsies, CT scans, and genetic/immunostaining results to detect early-stage cancer in patients

PROJECTS

CT Medical Imaging Classification | *Python*
- Cleaned data and implemented a **YOLOv8** computer vision model to identify tumors from CT scans

Simulated Hand Balancing a Stick Using Genetic Algorithms | *Python, Java*
- Developed a **genetic algorithm** to manage a simulated hand's motion for balancing a stick
- Optimized efficiency by integrating the genetic algorithm with a **feedback loop**, enhancing the stick's balance

Wearable Carbon Fibre Sensors for Health Monitoring | *Python, JS (Angular)*
- Optimized 5 biosensors, improving accuracy by 23% compared to stock and receiving a $5,000 grant with a team
- Implemented a live performance scoring interface using **Angular** to increase user engagement

AI-Powered Smart Drones for Wildfire Prevention | *Python*
- Developed a real-time ML model based on **YOLOv5** to train a drone's sensors/camera input to detect wildfires

SELECTED PUBLICATIONS

- Abdelnaby, M., **Tayeb, I.**, Alloush, A., Alyosef, H., Alnoaimi, A., Zeama, M., Mohammed, M., Onaizi, S. (2024). Post-synthetic modification of UiO-66 analogue metal-organic framework as potential solid sorbent for direct air capture, *Journal of CO_2 Utilization, Volume 79* 🔗
- Alsulaiman, A., Alharthi, S., Albariqi, A., Mutabaqani, R., Bokhari, F., **Tayeb, I.**, et al. (2022). KRAS G12C-Mutant Non-Small-Cell Lung Adenocarcinoma: First Documented Report in the Arabian Gulf. *Cureus, 14* 🔗

ACHIEVEMENTS

#5 / 100+ teams – Finalist; DataFest, American Statistical Association (Data Analysis & Modeling)   *Mar 2024*

SKILLS

Languages: Python, JavaScript/TypeScript, Java, SQL, C, MATLAB   **Deployment:** Git, Docker, Vercel
Machine Learning: NLTK, SKL, TensorFlow, PyTorch, Transformer Models (BERT, GPT, Gemini, Llama)
Web/App Development: React, Angular, PostgreSQL, HTML/CSS, Framer Motion, SCSS