Islam M. Tayeb

📍 101 Wannamaker Drive, Durham, NC 27708 | 📞 +1 (919) 685-2112 | ✉ islam.tayeb@duke.edu | 🔗 LinkedIn | 🌐 Portfolio

EDUCATION

Duke University *Durham, NC*

B.S. in Computer Science, Minors in Bioinformatics & Chemistry *Expected 2027*

Relevant Coursework: Data Structures and Algorithms, Computer Architecture, Matrices and Vectors

EXPERIENCE

Research Analyst Intern – 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 market research efforts to explore and analyze competitors' strategies and performed a bulk of data collection

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
- Analyzed materials by utilizing **R** to interpret data and highlight key findings to be featured in publications
- 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

PROJECTS

Web App for Molecular Bioactivity Prediction
- Identified key molecular descriptors to develop a **regression model** for analyzing bioactivity using a ChEMBL database of 10,000+ molecules and created analysis graphs using **R**
- Linked the model to the back-end of a web application and built its front-end using **Streamlit**

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

Simulated Hand-Balancing a Stick Using Genetic Algorithms
- 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
- 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
- Developed a real-time **YOLOv5** computer vision model to train a drone's sensors/camera input to detect wildfires

ACHIEVEMENTS

Published Researcher; PMC, Nature, and Scopus indexed *Present*

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

#350 / 31,000+ participants – Silver Medal; National Mawhiba Math Competition (Saudi Arabia) *Apr 2023*

#300 / 20,000+ participants – Silver Medal; National Mawhiba Informatics Competition (Saudi Arabia) *Jan 2022*

SKILLS

Languages: Python, TypeScript/JavaScript, Java, SQL, R, C, MATLAB   **Deployment:** Git, Docker, Vercel

Machine Learning: NLTK, SKL, TensorFlow, PyTorch, Transformer Models (BERT, GPT, Gemini, Llama)

Web/App Development: React, Angular, Streamlit, PostgreSQL, HTML/CSS, Framer Motion, SCSS