Arish Shahab

647 617 8397 | shahaa9@mcmaster.ca | linkedin.com/in/arishshahab | github.com/arishs24 | arishshahab.com

EDUCATION

McMaster University — **Hamilton, Ontario, Canada**
Biomedical Engineering and Health Sciences (iBioMed) Student (B.Eng) — *Expected Graduation: May 2028*

Honors/Awards: 1st place - iBioMed Hackathon, 13th Globally - Harvard University International Research Olympiad

Extracurriculars: iBioMed 1st Year Ambassador
Teams: GWSS 5409 First Robotics Competition (FRC), Design and Manufacturing Team (AutoCAD/Python/Java)

WORK EXPERIENCE

Johns Hopkins University | NeuroData Lab — **Maryland, Baltimore, USA**
Computational Neuroscience Researcher — *Oct. 2024 – Present*

- Developed and optimized machine learning algorithms for analyzing complex neural data to support insights in neuroscience and clinical research
- Improved computational efficiency of algorithms using advanced data processing techniques, contributing to more accurate and robust research outcomes
- Collaborated with a multidisciplinary team to design models aimed at understanding neural patterns and enhancing data-driven decision-making in healthcare

Hamilton Health Sciences | Juravinski Hospital — **Hamilton, Ontario, Canada**
Clinical Researcher — *May. 2024 – Present*

- Involved in the design, development, and commercialization of new products for orthopedic applications, enhancing patient outcomes in knee and hip replacements.
- Conducted microscopic examinations, dynamic mechanical analysis, and material analysis to evaluate the biocompatibility and structural integrity of orthopedic devices, ensuring minimal post-operative complications.
- Utilized solid modeling and simulation software like MATLAB and COMSOL to design and test biomedical engineering models.
- Developed advanced machine learning models with over 85% accuracy to predict patient trajectories based on pre-operative symptoms.
- Presented research at the McMaster Undergraduate Research Showcase with over 150+ undergraduate, graduate, and PhD students.

University of Waterloo — **Waterloo, Ontario, Canada**
Biomedical Device Researcher — *Mar. 2024 – Sept. 2024*

- Involved in the design and development of a smart liposomal drug delivery system for ILD treatment, improving targeting accuracy by 15% and advancing medical device development.
- Conducted pharmacokinetic studies and microscopic examinations to assess the interaction between liposomal carriers and biological tissues, contributing to the optimization of drug delivery parameters.
- Designed and simulated biomedical engineering models using MATLAB to test the behavior of liposomal drug delivery in virtual environments, reducing the need for initial physical trials by 30%.
- Presented research at the 3MT Biomaterials competition alongside over 50+ PhD students, showcasing advancements in drug delivery.

PROJECTS

Early Detection of Neurodegenerative Diseases via Retinal Imaging | ***Frameworks & Languages Used:*** *Python, TensorFlow, Keras, Flask, OpenCV, Pillow, React.js, Node.js, Express, MongoDB/PostgreSQL*

- Developed a full-stack application using a CNN model to analyze retinal biomarkers like Retinal Nerve Fiber Layer (RNFL) thinning, achieving 85% accuracy in detecting early-stage neurodegenerative diseases (Alzheimer's, Parkinson's).
- Integrated Python Flask API and React.js front-end to provide real-time, non-invasive diagnostics, demonstrating potential for clinical applications in early disease detection.

Aqua Boost (N&W S5 Buildspace) | ***Frameworks & Languages Used****: Python, HTML/CSS/JS, C++ , JS, AutoCAD, MATLAB, TensorFlow, Keras, SQL, Raspberry PI, Arduino IDE, Flutter*

- Developed and prototyped a wearable hydration monitoring system, utilizing bioimpedance sensors and advanced machine learning models for real-time tracking, achieving 90% prediction accuracy.

Iremia (iBioMed Hackathon) | ***Frameworks & Languages Used:*** *HTML/CSS/JS, Raspberry PI, TensorFlow, OpenCV, Firebase, OpenAI API*

- Developed a wearable device using Raspberry Pi and sensors to monitor stress levels, integrating GPT-3 for real-time personalized support.

ADDITIONAL INFORMATION

Programming Languages: Python, Java, C++, HTML, React, MATLAB, R Studio, SQL, C#
Tools & Technologies: AWS, Azure, AutoCAD, PyTorch, OpenCV, COMSOL, Arduino, Raspberry Pi, Express, MongoDB, Docker, TensorFlow, Keras, SolidWorks, Fusion 360, Jenkins, Kubernetes, Firebase
Certifications: AWS Certified Cloud Practitioner, AWS Certified Machine Learning, Google Cloud Certification
Laboratory Techniques: PCR, Gel Electrophoresis, Medication Dispensing, Titration, Dilution, Microscopic Imaging, Dynamic Mechanical Analysis (DMA), Flow Cytometry, Cell Culture, Immunohistochemistry, ELISA, Scanning Electron Microscopy (SEM)