Taqi Hamoda

t.hamoda@mail.utoronto.ca | https://taqihamoda.github.io/ | github.com/TaqiHamoda | linkedin.com/in/taqi-hamoda

SUMMARY

New graduate, software engineer with a strong background in **back-end development**, **computer networks**, and **robotics software**; contributed to open-source projects with recognition for academic excellence.

EDUCATION

University of Toronto **Honors B.Sc.**
Computer Science Specialist *November 2023*

PROFESSIONAL EXPERIENCE

Continuum Robotics Lab, University of Toronto **Mississauga, ON, Canada**
Undergraduate Researcher *April 2021 - Present*

- Developed an open source Robot Management web application to facilitate robotic experimentation and research. Supervised the technical research and design processes - **Python/Flask, Node.js**
- Designed a distributed interface system that enrolls robots using a user-specified config file and executable. TCP UNIX sockets were used for inter-process communication - **Python & Linux**
- Refactored the BLMC motor drivers codebase to leverage CMake for unified building and installation, implementing a SuperBuild for automatic dependency resolution, streamlining the development process - **C/C++ & CMake**
- Contributed various enhancements and bug-fixes to an open-source visualization toolbox for continuum robot modeling such as displaying multidimensional projections - **Python, Numpy, & Matplotlib**

SOTI Research and Innovation Lab **Waterloo, ON, Canada**
Software Developer *September 2021 - June 2023*

- Developed high-performance device simulators (Rest, MQTT, MQTT RPC) for internal testing, achieving 70% improvement in test coverage/efficiency. Benchmarked clients on Azure and AWS VMs. - **C#/.NET**
- Engineered a domain-specific scripting language and interpreter to evaluate and respond to conditional changes in devices' physical state, enabling real-time monitoring and automation. - **C#, Data Structures, Algorithms**
- Enhanced SOTI's embedded MQTT SDK by integrating SSL, process scheduling, and user authentication features, while parallelizing connection logic, resulting in improved reliability and security - **C/C++**
- Owned end-to-end delivery of a critical MIB parsing system; leveraged Javalin, Maven, and the Mibble library to parse OEM MIB files and generate semantic files for seamless device enrollment. - **Java & Maven**
- Mentored staff and partners in simulator configuration, testing, and execution. Developed standards and operating procedures regarding the use of device simulators within SOTI. - **Training/Support**
- Worked closely with QA to test and resolve release-critical bugs in a time-sensitive manner. Followed Agile Development principles and developed unit tests to produce reliable software efficiently. - **Agile/Scrum**

RESEARCH PUBLICATIONS

Open Continuum Robotics – One Actuation Module to Create them All
Reinhard M. Grassmann, Chengnan Shentu, **Taqi Hamoda**, Puspita Triana Dewi, and Jessica Burgner-Kahrs
Frontiers in Robotics and AI, 2024 (DOI: 10.3389/FROBT.2024.1272403)

AWARDS

NSERC's Undergraduate Student Research Award *April 2023*
University of Toronto Mississauga's Undergraduate Research Grant *December 2021*

SKILLS

Languages: Python, Bash, C/C++, C#, Java, Dart, Javascript/Typescript
Web Development: .Net Core, Flask, Node.js, React.js, Material UI, UI/UX, API Endpoints
Databases: SQL, MongoDB, CouchDB, Relational Algebra
Robotics: ROS, Raspberry Pi, Arduino, Numpy, Scipy, Matplotlib, Eigen, Jupyter
Platforms/Tools: Linux, Git, CMake, Visual Studio, Flutter, Android
Other: Algorithms, Data Structures, Network Security

Spoken Languages: Arabic (Native), English (Native), Spanish (Proficient)