Tridib Banik

Highlights of Qualifications

- Currently enrolled in the Software Engineering Co-op undergrad program at McMaster University.
- Active team member in the Battery Workforce Challenge BMS Software sub-team for 1+ year, focusing on model-based design, system integration, and simulation of a full-scale battery pack for a light-duty EV.
- Career interests: Reinforcement Learning, EV Battery Management System (BMS), and data analysis.

Education

Bachelor of Engineering, Software Engineering Co-op

Sept. 2023 – April 2027

McMaster University, Hamilton, ON

• Relevant Courses: OOP in Java, Integrated Cornerstone Design Projects in Engineering, Data Structures and Algorithms, Development Basics in C, Linux and GitHub, Computer Architecture.

Skills

ProgrammingLinux, Bash, Python, Java, C, Verilog HDL, HTML, CSS, PostgreSQL, Maven, MATLAB, Simulink, Autodesk Inventor, GitHub, GitLab, Intel Quartus Prime, and Ansys Granta.

Business:

Effective communication, project management, problem-solving, and critical thinking.

Projects

TrafficLightRL | Python, OpenAI Gymnasium, Stable-Baselines3 in PyTorch Jan. 2025 – Mar. 2025

- Collaborating with a team of 5 to develop a dynamic traffic light optimization system using **reinforcement learning** to reduce urban congestion and improve travel efficiency at university campuses.
- Focusing on optimizing traffic flow at the **Sarnia Road and Philip Aziz Avenue** intersection near **Western University** based on real-time simulation environments, leveraging RL techniques to reduce congestion.

CI/CD for Simulink Model Verification | GitLab, Simulink, Simulink Test

Nov. 2024 – Jan. 2025

- Forked a project from MathWorks and validated Simulink models using GitLab at the **BWC team**, gaining experience in setting up GitLab Runner, managing CI/CD variables, and optimizing automated workflows.
- Automated the CI/CD pipeline for Simulink models, streamlining the verification, build, test, packaging, and deployment stages, and utilizing Test Manager and Model Advisor to generate reports.

BlackJack Game | C, Bash, YAML, GitHub

Nov. 2024 – Dec. 2024

- Contributed to a team of four to develop a GUI-based BlackJack game, implementing and validating game logic functions with **Bash-based test scripts**.
- Achieved 100% test coverage and automated artifact uploads via build scripts.

Work Experience

Research Assistant

Jun. 2025 - Present

- McMaster University, Hamilton, ON
 - Develop and test EV BMS contactor control, state of charge (SoC) estimation and fault detection algorithms using MATLAB and Simulink, as part of a research paper aligned with formal software requirements.
 - Authored a 308-page internal PowerPoint guide detailing software installation and hardware setup (custom BMS with CMU, BMU, BJB, Pack Emulator) to support onboarding and research continuity.

Awards and Certifications

Google IT Support Professional Certificate, Google		June 2024
OHSA, AODA, WHMIS, Anti	-bias, and Cultural Awareness, HWTC	May 2024
• Lt. Governor's Community Volun	teer Award, Lieutenant Governor of Ontario	June 2023
Service Excellence and Emotional Intelligence, Ontario Tourism Education Board		Mar. 2023
• Diploma in Yoga and Health E	ducation, Bardhaman Yoga Centre, India	Sept. 2022