Tridib Banik

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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

Programming & Software:	Linux, 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**

- Collaborated 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.
- Focused 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 Volunteer Award, Lieutenant Governor of Ontario **June 2023**
- Service Excellence and Emotional Intelligence, Ontario Tourism Education Board **Mar. 2023**
- Diploma in Yoga and Health Education, Bardhaman Yoga Centre, India **Sept. 2022**