Shivom Sharma

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Education

McMaster University, Mechatronics Engineering & Management — **Expected Apr. 2026**
Mechatronics Engineering and Management [CO-OP] — *Hamilton, ON*

- **Relevant Coursework:** Operating Systems (C), Real-Time OS (C), Data Structures & Algorithms (C++), Machine Learning (Python), Embedded Systems (C, FPGA), Software Development, Financial Modeling (Excel, Python), Scientific Computation (Julia)

Experience

Tesla — **Austin, TX**
Incoming Software Engineer Intern — *May. 2025*

Swiftware Lab — **Hamilton, ON**
Undergraduate Research — High Performance Computing — *Mar. 2025 - Present*

- Spearheading the implementation of Fast Multipole Methods to enhance Matrix-Matrix multiplication efficiency for Boundary Element Mesh problems in Computer Graphics

Tesla — **Austin, TX**
Software Engineer Intern — *Jun. 2024 – Aug. 2024*

- Engineered a high-efficiency ETL pipeline using **Airflow** and **Pandas**, slashing processing time from 10 minutes to 30 seconds per model across **40+ models**. Enhanced data accessibility through strategic model compression for **Amazon S3** and orchestrated data migration to **SQL Server**.
- Architected a performance-optimized **Python** service leveraging **Redis** caching and **GraphQL** APIs, reducing client request footprint by **50%** and decreasing latency by **30%**, dramatically improving service responsiveness.
- Refactored CI/CD pipelines with **Docker**/**Kubernetes** and **GitHub Actions**, boosting deployment efficiency by **15%** and minimizing production downtime across critical manufacturing systems.

Tesla — **Austin, TX**
Controls Software Development Intern — *Sep. 2023 – May 2024*

- Pioneered a high-precision **Python**/**Halcon** vision algorithm for Cybertruck rotor inspection, delivering **97% accuracy** with **22ms** processing time per part, enabling automated quality control for **7,000 parts**/**week** in production environments.
- Led cross-functional engineering initiatives to optimize hardware/software requirements, generating **$10,000** in cost savings through strategic component selection and system design refinements.
- Established robust **Git** version control practices and trained **7+ team members**, reducing technical onboarding time by **20%** and elevating production line efficiency by **15%**.
- Transformed **PLC** logic for pneumatic control systems, achieving **30%** reduction in cycle times and significantly increasing manufacturing throughput in critical production lines.

Projects

Boox CLI Textbook/Manga Uploader | *Go, Unix, MangaDex API*

- Crafted a high-performance **Go**-based CLI tool utilizing **cobra-cli** framework and advanced shell scripting to automate textbook and manga uploads to e-ink tablets, streamlining digital content management for academic and entertainment purposes.

Atari Pong AI with Proximal Policy Optimization | *Python, PyTorch, OpenAI Gym*

- Developed an advanced reinforcement learning agent utilizing **MLP** architecture and frame stacking techniques, achieving a **17-point** improvement in average game score across **500 episodes**, demonstrating mastery of modern policy optimization methods.

Pacemaker Communication Interface | *Flask, JavaScript, CSS, SQLite, Simulink*

- Designed and implemented a comprehensive full-stack application for critical pacemaker data management using **serial communication** protocols, incorporating **SHA-256** encryption to ensure patient record security and compliance with stringent medical data privacy standards.

Skills

Languages: Python, C, C++, Go, SQL, JavaScript/HTML/CSS, Java, Verilog
Frameworks: PyTorch, Flask, FastAPI, React, Node.js, GraphQL
Tools: Git, Docker/Kubernetes, AWS, Redis, Airflow, Kafka, Splunk, Grafana, CI/CD
Systems: Linux/Unix, Windows, PLC/SCADA, Embedded Systems (STM32, De1-SoC)