# Shivom Sharma

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## Education

**McMaster University** Hamilton, ON
*Bachelor of Engineering in Mechatronics Engineering & Management [CO-OP]* *Expected 2026*

- **Relevant Coursework:** Data Structures and Algorithms, Machine Learning, Operating Systems, Control Systems, Real Time Operating Systems, Embedded Systems (STM32, De1-SoC)

## Experience

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

**Undergraduate Research Assistant - High Performance Computing** Mar 2025 - Present
*McMaster University | Swiftware Lab* *Hamilton, ON*

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

**Software Engineer Intern** Jun 2024 - Aug 2024
*Tesla* *Austin, TX*

- Engineered a high-efficiency ETL pipeline using Airflow and Pandas reducing processing time from 10 minutes per model to 30 seconds per model, optimizing Factory Layout Graph generation
- Enhanced data accessibility through strategic model compression for Amazon S3 and orchestrated data migration to SQL Server, PostgreSQL and MySQL databases
- Built a scalable Python microservice leveraging Redis caching, Celery task queues and GraphQL reducing client request footprint by 30% to improve responsiveness
- Refactored CI/CD Pipelines with Docker, Kubernetes and GitHub Actions, boosting deployment efficiency and minimizing production downtime across critical manufacturing systems by 15%

**Controls Software Engineer Intern** Sep 2023 - May 2024
*Tesla* *Austin, TX*

- Developed novel vision algorithm using Python and Halcon for Cybertruck rotor inspection, delivering 97% accuracy, with 22ms processing time per part, enabling automated quality control for 7,000 parts/week
- Led cross-functional engineering initiatives to optimize hardware/software requirements, generating $10,000 in cost savings through strategic component selection and system specification refinement
- Designed PLC function blocks for various control systems with robust safety, and performance requirements, achieving 30% reductions in cycle times utilizing optimized software and state machine design

## Projects

**Atari Pong AI Agent** | *Python, Pytorch, OpenAI Gym*

- Developed a reinforcement learning agent utilizing a simple MLP architecture achieving a 17 point winning score average, in under 500 episodes of training through the usage of Proximal Policy Optimization

**Boox-CLI** | *Go, BASH, RESTful, Networks*

- Crafted a high-performance GO-Based CLI tool utilizing cobra-cli framework and MangaDex API to efficiently upload textbooks and manga to my Onyx Boox tablet in 2 seconds per 100 MB
- Reverse-Engineered various network requests from e-ink device to craft my own api requests, maintaining high performance and stateless design

**HFT Simulator** | *C++, Networking, TCP/IP, Sockets*

- Engineered a High-Frequency Trading simulator in C++, processing market data feeds and simulating order book dynamics to facilitate robust backtesting of algorithmic trading strategies

## Technical Skills

**Languages**: C/C++, Go, HTML/CSS, JavaScript, MATLAB, Python, Verilog
**Frameworks**: Django, FastAPI, Flask, Node.js, Pytest
**Developer Tools**: AWS, Celery, Docker, Git, GitHub Actions, Kubernetes, NVIM, Postman, Unix/Linux, Windows
**Libraries**: Boost, Ceres Solver, CGAL, Eigen, Matplotlib, NumPy, OpenCV, Pandas, PyTorch, Scikit-Learn