Shivom Sharma

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EDUCATION

McMaster University, B.Eng. Mechatronics Engineering & Business 3.4/4.0 GPA **Graduating May 2026**

- Relevant Coursework: DSA, OS, RTOS, Networks, Embedded Systems, Machine Learning, Statistics

WORK EXPERIENCE

Tesla, Software Engineer Intern **May 2025 – August 2025**

- Automated execution of human-level factory tasks by building an AI Copilot with Python, TypeScript, and Kafka
- Eliminated cross-functional data conflicts with full stack version control using React, FastAPI and MongoDB
- Created scalable LLM communication via robust REST APIs and custom chat components
- Improved CI/CD reliability by orchestrating Kubernetes deployments using Helm, Docker, and GitHub Actions
- Delivered real-time UI updates by implementing async agent communication with WebSockets and Redis pub/sub

Tesla, Software Engineer Intern **June 2024 – August 2024**

- Delivered factory metrics to 100+ engineers by building distributed systems with Python, Redis, Celery, and GraphQL
- Decreased query latency by 18% through schema redesign of SQL Server, PostgreSQL, and MySQL databases
- Boosted data pipeline throughput by optimizing ETL pipelines in Airflow and FastAPI, leveraging Pandas and NumPy
- Saved 80+ engineering hours per week in load times by implementing Revit model compression with AWS S3 storage
- Enhanced code coverage through CI/CD integration with unit and A/B tests, accelerating iteration in agile sprints

Tesla, Controls Engineer Intern **September 2023 – May 2024**

- Saved $242K by delivering a high-speed, multi-camera computer vision system using Python for Cybertruck rotor QC
- Collaborated cross-functionally to reduce system cost by $20K per line via joint software/hardware optimization
- Captured 5K+ images daily for model training by integrating C# APIs with PLC and HMI devices
- Cut cycle times across multiple production lines by programming PLC logic into Tesla Standard Library
- Applied Siemens TIA Portal diagnostics, logic analyzers, and hardware debugging tools to validate/tune various I/O

SwiftWare Lab, Undergraduate Researcher **March 2025 – Present**

- Developed multiple solvers in C++ for fluid simulations to reduce memory and computational footprint
- Beat BEM++ compression benchmark with a Fast Multipole solver in C++/CUDA for Laplace/Helmholtz PDEs
- Created data visualizations and technical reports communicating simulation insights to Waterloo researchers

TECHNICAL SKILLS AND INTERESTS

- **Programming Languages:** Python, C, C++, Go, TypeScript, JavaScript, SQL, Assembly
- **Tools:** Linux, Windows, Docker, Kubernetes, AWS, Azure, Vim, VSCode, Splunk, Grafana, GCP, LangGraph
- **Concepts**: Embedded Systems, AI/ML, Controls, Data Pipelines, Backend, TCP/IP, UDP
- **Interests:** Video Editing, Photography, Basketball

SELECTED PROJECTS

BOOX E-Ink API Integration

- Built a Go CLI to upload textbooks/manga to E-Ink readers via REST APIs, achieving 50 MB/s transfer
- Reverse-engineered API responses to build robust requests with intuitive debugging

Stepper-Motor ASIP

- Boosted execution speed by 60% vs general purpose CPU benchmark by adding pipelining and instruction caching
- Designed a custom RISC-style processor in Verilog and C++ with 13 instructions to control precision stepper motors
- Utilized JTAG debugger, oscilloscopes and multimeters to test hardware signals, ensuring real-time control accuracy