

Prasun Sharma

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Education

University of Waterloo · Bachelor of Mathematics, Computer Science · Waterloo, Ontario Expected May 2029

- **Relevant Coursework:** Functional Programming, Algorithm Design, Data Abstraction, Linear Algebra, Integral Calculus

Experience

Software Engineer Intern · Toronto, Ontario · Sunnybrook Research Institute Jul 2026 -- Aug 2026

- Accelerated 3D acoustic simulations **11x** using a hybrid k-Wave/FFT pipeline while maintaining **over 95% field agreement**
- Optimized hologram generation across **3 algorithms and 30+ cases**, achieving **86.9% efficiency** and **0.83 spatial correlation**
- Automated target-to-STL holographic lens generation at **50 μm resolution**, reducing design time by **80%** across planar, curved, and multi-plane designs
- Developed automated **image-processing and optimization pipelines** that convert target pressure fields into phase distributions, enabling computational generation of complex 3D acoustic holograms

Full-Stack Developer · Waterloo, Ontario · Incubator Hacks Apr 2025 -- Nov 2025

- Led a **3-developer team** to build and launch a production hackathon platform serving **200+ participants** and **75+ project submissions**
- Rebuilt the event platform and optimized its architecture and metadata, improving its Lighthouse SEO score from **62 to 83**
- Load-tested production infrastructure with **1,000 concurrent users** using k6, sustaining **27.9 ms average response times** with **0% request failures**

Machine Learning Researcher · Santa Clara, California · STEM-Away May 2024 -- Aug 2024

- Led a **15-member ML team** analyzing **1M+ protein interactions** and developed graph features that improved F1 by **18%**
- Optimized feature extraction across **5+ ML models**, reducing training time by **65%** while achieving a **0.87 ROC-AUC**
- Engineered a Python data pipeline processing **1M+ interaction records**, reducing preprocessing time by **50%**

Projects

WatchDog · StarterHacks 24' Winner · React, Flask, Python, NLP, Tailwind CSS

- Built a real-time scam detection platform achieving **92%** classification accuracy across **50+** conversation samples
- Reduced audio-to-alert latency to **1.4 seconds** through a **4-stage** speech recognition and NLP pipeline
- Improved scam detection precision to **89%** while reducing false positives by **31%**, using context-aware classification to continuously update risk throughout live conversations

VeloCity · React, TypeScript, Python, Random Forest, Leaflet

- Ranked **20** Toronto cycling corridors using a **9-factor model** across safety, demand, equity, and connectivity
- Trained a random forest on **754** observations, reducing held-out MAE by **39.5%** from **1.115 to 0.675**
- Processed **50,000+** geospatial records across 3 public datasets, reducing corridor analysis time by **85%** through an automated geospatial ETL pipeline

Royal Theater · React, Firebase, Stripe, JavaScript

- Built a theater booking platform supporting **1,000+** simulated bookings across reservations, checkout, and payment
- Reduced booking latency by **42%** to **320 ms** by optimizing Firebase reads, writes, and application state
- Load-tested reservation infrastructure with **500** concurrent users, sustaining **99.8%** successful transactions while preventing duplicate seat bookings under concurrent requests

Skills

Languages

Python, TypeScript, JavaScript, Go, C++, SQL

Frameworks & Libraries

React, Node.js, FastAPI, Flask, Django, Tailwind CSS, OpenCV

Technologies & Tools

PostgreSQL, AWS, Azure, Firebase, MongoDB, Git, OpenAI API, k6, pytest