Lin Hong

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10× Hackathon Winner · Quantitative Research · Algorithm Development

Education

University of Waterloo Sept 2024 – Apr 2028

Bachelor of Computer Science (Co-op)

- President's Scholarship of Distinction, Ted Rogers Future Leaders Scholarship for Women
- Relevant coursework: Algorithm Design, Data Abstraction, Calculus 1 & 2, Intro to CS

Skills

Languages: Python, C++, Go, Java, JavaScript, TypeScript, Bash
Technologies: PyTorch, TensorFlow, NumPy, Pandas, Git, Docker, AWS, PostgreSQL, MongoDB

Experience

FTC Robotics Sept 2022 – June 2025

Senior Software Lead *Toronto, ON*

- Engineered telemetry pipelines aggregating encoder, IMU, and camera data into unified robot state estimation using **Python** and **statistical analysis** techniques.
- Designed signal filtering and validation algorithms to eliminate noisy sensor readings, improving reliability by 20% and doubling response speed through **numerical programming** optimizations.
- Implemented PID tuning with hardware engineers, improving autonomous navigation accuracy by 70% using algorithmic parameter optimization.

Walnote AI July 2025 – Present

Founding Engineer *Toronto, ON*

- Optimized a large-scale video rendering pipeline, reducing processing time by 5× through segment-based parallelization and backend optimizations in **Python**.
- Built scalable REST APIs using FastAPI, Dockerized services, and asynchronous Celery workers orchestrated through Redis for high-performance data processing.
- Implemented real-time synchronization system with WebSockets and Redis pub/sub event broadcasting, enabling efficient data streaming and state management across distributed services.
- Designed and deployed PostgreSQL database schemas with Neon hosting, ensuring data integrity and optimized query performance for large-scale application workloads.

Projects

Chess Bot | *PyTorch, Modal, Python* June 2025

- Built an AlphaZero-style chess engine with a unified policy–value network trained via large-scale self-play **reinforcement learning** using **PyTorch**.
- Integrated neural priors into Monte Carlo Tree Search (MCTS) to guide node expansion, improving playing strength and convergence stability through **algorithmic optimization**.
- Ran distributed training and self-play generation on A100/H100 GPUs via Modal, achieving high-throughput RL cycles and automated checkpoint evaluation; reached ∼1600 Elo strength.

Spotilike | *TensorFlow, DeepFace, Python* June 2025

- Created an AI-driven music discovery platform using **TensorFlow** and DeepFace for real-time emotion analysis and song matching.
- Integrated **machine learning** models with Spotify API and MongoDB for emotion-aware track recommendations based on facial expression analysis.

Lofied | *Python, torchaudio, Pedalboard* May 2025

- Developed a **Python** tool converting Spotify playlists to lo-fi tracks using digital signal processing (DSP) and **numerical programming** techniques.
- Implemented Basic Pitch for audio-to-sheet-music conversion; won Best Solo Hack & Top 6 Overall at JamHacks 2025.