Alexander Kim

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Education

Hamilton College May 2025

B.A. Mathematics | Dean's List, Emerson Grant Recipient

- Relevant Coursework: Data Structures & Algorithms, Deep Learning, Advanced Linear Algebra, Graph Theory

Technical Skills

- **Languages:** Python (advanced), C, C++, JavaScript/TypeScript, Bash, SQL, R
- **ML / DL:** PyTorch, scikit-learn, NumPy, pandas, Matplotlib, OpenCV, MCP, CUA, Ollama
- **Systems & DevOps:** Docker, Linux, ZeroTier, REST/GraphQL, Git

Projects

SOFIA - Dynamic Local AI Agent Mar 2025 – Present

- Engineered custom middleware for Ollama gemma3 and qwen2.5 to enable LLM vision, MCP and tool use.
- Implemented MCP servers from scratch for terminal, gmail, google calendar manipulation, and mouse and keyboard control via OmniParser OCR.

tensorkit-learn - Custom ML Library Jan 2025 – Present

- Created ~2.1K LOC ML library (C++ & Python) implementing tensors, SVM, GLM; Pybind11 bindings deliver NumPy-comparable speed.
- Wrote 32 unit tests to check functionality across tensor ops and algorithms.

braindump - Private Blog Mar 2025

- Designed and built personal tech blog with HTML, CSS, vanilla JS frontend, and Supabase backend.
- Deployed for VPN access on Jetson Nano 2 GB via Docker container and ZeroTier.

FlappyBot - RL Agent Jan 2025

- Re-implemented Deep Q-Learning in PyTorch; agent reaches score 1539 (×15 human avg 100).

PlayCaller.ai - Basketball Coaching Assistant Jan 2024

- Built React front-end and CV back-end. YOLOv4 and ResNet18 pipeline achieves 83.7% offensive success-prediction accuracy on over 1.5K custom court maps.

Professional Experience

The Money Company, Boston, MA Mar 2025 – Present

Software Developer

- Architected cross-platform (Expo) mobile invoicing MVP. Fine-tuned PyTorch OCR and exposed via Sanic REST API in Docker for horizontal scalability.
- Automated receipt parsing and integrated with Memgraph data pipeline for public launch.

Hamilton College, Clinton, NY May 2024 – Aug 2024

Emerson Grant Researcher

- Deployed AVRA web app via Docker image for ~2000 students. Integrated React frontend and PostgreSQL, PyTorch SVM/CNN backend to give real-time vocal feedback.
- Trained SVM/CNN on +7.5K pop-music spectrograms. Achieved 96.5% accuracy for CNN classification and 86.6% accuracy for SVM classification.

BonePixel, Boston, MA Jun 2023 – Aug 2023

Software Developer Intern

- Developed Python mesh-repair algorithms correcting ~10% of synthesized surgical meshes, improving VirtualHip planning accuracy.
- Engineered and tested surgical simulation algorithms, accelerating physician planning of PAO and VDRO procedures by up to 20%.

BCH Musculoskeletal Informatics Group, Boston, MA Jun 2022 – Nov 2022

Data Science Intern

- Annotated 1.5K clinical notes. Co-authored paper on domain-adaptive clinical NER.