Xin Lei Lin

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EDUCATION

University of Toronto – St-George (Trinity College)   Toronto, Ontario, CA
Bachelor of Science – Computer Science Specialist (COOP), and Molecular Genetics Major   *Aug. 2023 – May 2027*
- **Entrance awards**: C. David Naylor Scholar for Leadership ($20k) & Arts and Science Scholar ($7.5k)
- **Leadership**: Student Council President, Publication Director of *Le Manifeste* and *The Last Word* (160+ pages), BrébeufHx VP & MariHacks Organizer (800+ participants), & competitive programming tutor [YouTube]

EXPERIENCE

Machine Learning Researcher   September 2024 – Present
With Prof. Pascal N. Tyrrell at MiDATA (University of Toronto)   *Toronto, Ontario, CA*
- Augmenting low-label datasets through **Latent Conditional Diffusion (LCD)** to generate images and segmentation masks, improving tissue fidelity, diversity, and intestinal tract cancer segmentation performance.

Computer Vision Researcher   February 2024 – Present
With Prof. Babak Taati at KITE (UHN) and the Vector Institute   *Toronto, Ontario, CA*
- Extending the context window of state-of-the-art image-by-image **ViTPose**-based models to 32-frames videos using **VideoMamba** and **InfiniAttention** for **SMPL human mesh recovery** and **2D keypoint pose detection**.

Machine Learning Engineer   July 2024 – Present
Kadist   *(Remote) – San Francisco, California, US*
- Deployed RSONART, an art chain of thought agent with vision and audio capacities. [https://www.rsonart.com/]
- Integrated Retrieval Augmented Generation (RAG) through history-aware & ensemble retrieval with GPT-4 API.
- Backend with Flask, vector database of **300k webscraped artists & exhibitions** on pgvector and PostgreSQL.

Dry Lab Researcher   April 2024 – Present
Plasmid.AI - Internationally Genetically Engineering Machine (UToronto Team)   *Toronto, Ontario, Canada*
- **Awards**: Top 10 of 500+ teams globally & Winner of Best Model at the IGEM 2024 in Paris, France [GitHub]
- Fine-tuned Evo (a Striped-Hyena genome model) to generate plasmid sequences with antibacterial resistance.

Machine Learning Researcher   October 2022 – September 2023
With Prof. Houari Sahraoui at DIRO (University of Montreal)   *Montreal, Quebec, CA*
- Represented **Team Canada** (top 12 nationals) at **ISEF** 2023 in Dallas, Texas (**10 awards, $15k+** in total).
- Trained and compared four models (CNNs & LSTMs) for American Sign Language to English translation. [ISEF]

Frontend Developer   May 2022 – September 2022
HauteTechOrientale   *Montreal, Quebec, CA*
- Deployed [https://hautetechorientale.com] in French and English with JavaScript, HTML, CSS & Bootstrap.

PROJECTS

Spydle – A real-time multiplayer word game   September 2024 – December 2024
- Game servers on GCP w/ Kubernetes, Docker, Agones and Redis DB. Java Swing & Springboot Frontend [Github]

Red Handed – MakeUofT (2nd for Qualcomm and Flow ($1200))   February 2024
- **3 neural networks** and a robot arm to detect and counter drowsiness w/ Tensorflow & Arduino. [Devpost]

Re.Live – UofTHacks 11 (Cohere 1^{rst} Prize ($1500))   January 2024
- **Stable diffusion** and **Cohere RAG** to create Harry Potter-like dancing albums from static images. [Devpost]

DriveSense – HackTheNorth (Winning Finalist Project)   September 2023
- Mobile app to assist drivers with **vision models** for car plates, traffic lights and road signs (PyTorch). [Devpost]

XChange – ConUHacks VII (Offered Interview at National Bank)   January 2023
- Density estimation for anomaly detection in banking data. Frontend in React & data analysis in C++. [Github]

TECHNICAL SKILLS

Lanuguages Spoken: French (Native), English (Native), Mandarin (Fluent), Spanish (Proficient)
Programming Languages: C/C++, Python, R, Shell (Bash), Java, SQL, Dart (Flutter), JavaScript, HTML/CSS
ML/DS Tools: Torch, CUDA, DDP, Lightning, Tensorflow, OpenCV, Pandas, Numpy, Google Cloud, SciNet (slurm)
Other: Linux/Unix, Docker, Kubernetes, Tmux/Vim/VSCode, Git/GitHub, Flask/DJango, React, MongoDB/Postgres