

Xin Lei Lin

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TECHNICAL SKILLS

Languages Spoken: French (Native), English (Native), Mandarin (Fluent), Spanish (Proficient)
Programming Languages: C/C++, Python, Bash, Dart (Flutter), JavaScript, HTML/CSS (Bootstrap), Java, SQL
ML/DS Tools: Torch, CUDA, DDP, Lightning, Tensorflow, OpenCV, Pandas, Numpy, Compute Canada (slurm)
Other Tools: Linux, Docker, Tmux/Vim/VSCode, Git/GitHub, Flask/Django, React, MongoDB/Postgres

EXPERIENCE

- KITE Computer Vision Lab (University of Toronto)** February 2024 – Present
Machine Learning Researcher with [Prof. Babak Taati](#) *Toronto, Ontario, CA*
- From **image-by-image** to **video** 2D human pose detection through **VideoMamba** and **InfiniAttention**.
 - Experimented with VideoMamba and Vision Transformers **encoders** & Multi-head Attention, 3D-convolutional neural networks + 3D-deconvolutions, and Multi-layer perceptron **decoders** to support SMPL mesh recovery and keypoints coordinates regression through heatmaps. Added an InfiniAttention **backbone** for videos (32 frames).
 - Pretrained** the autoencoder on MS-COCO pose (136K frames) & **trained** the Infini-Attention video backbone on JHMDB (10K frames) and FreeMan (11M frames) resulting in increased correct keypoints for noisy videos. [Github](#)
- Kadist Art International** July 2024 – Present
Machine Learning Engineer *(Remote) – San Francisco, California, US*
- Deployed **rsonart.com**, an art gallery chatbot with vision and audio capacities for **KADIST International**.
 - Implemented Retrieval-Augmented Generation (RAG) with history-aware & ensemble retrieval, rerank and FAISS.
 - Generated embeddings for **29596 artists**, and **2851 artworks** webscraped from **ArtFacts**, KADIST and **e-flux**.
 - Hosted a Flask backend with Unicorn/Nginx, a NEXT.JS Frontend, and a MongoDB user database.
- DIRO (Universite de Montreal) and Regeneron ISEF** October 2022 – September 2023
Machine Learning Researcher with [Prof. Houari Sahraoui](#) *Dallas, Texas and Montreal, Quebec*
- Experimenting with **computer vision architectures** to translate American Sign Language to English.
 - Developed and compared 5 models (Fine-tuned Resnet + CNNs / LSTM + MLP) to translate **25 gestures**.
 - Represented **Team Canada (top 12 projects nationally)** at the **International Science and Engineering Fair 2023** (\$15000+ in awards). [ISEF Project](#)

PROJECTS

- PlasmidAI – International Genetically Engineered Machine (Dry Lab Team)** April 2024 - Present
- Fine-tuned Evo (a Striped-Hyena genome model) to generate plasmid sequences with antibacterial resistance.
- Red Handed – MakeUofT (2nd for Qualcomm and Flow (\$1200))** February 2024
- Integrated **3 vision** models to detect drowsiness (Tensorflow, MediaPipe & OpenCV – 95% accuracy).
 - 3D printed design of slapping machine that tracks and adjusts to nose height for optimal slapping. [Devpost](#)
- Re.Live – UofTHacks 11 (Cohere 1st Prize (\$1500))** January 2024
- Integrated a **diffusion model** – **DDPM** model to produce videos of people from static images dancing!
 - Integrated **Cohere RAG** to search a database of 100 songs with the user's mood. Frontend in **React**. [Devpost](#)
- SpaCey – UTRA (Best use of Flow & Starknet (\$1000))** January 2024
- Implemented MediaPipe hand-tracking through **3 different hand signals** to control a bluetooth rover. [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](#)
- AIBERT – Science Fair (\$1000 in various awards)** September 2021 – May 2022
- Natural Language Processing (BERT, Naive Bayes & LSTM) with 10000 messages for bilingual spam detection.
 - Implemented PostgreSQL database (1 million numbers), Flutter mobile app & Flask backend. [Github](#)

EDUCATION

- University of Toronto – St-George (Trinity College)** Toronto, Ontario, CA
Bachelor of Science – Computer Science Specialist, and Molecular Genetics Major Aug. 2023 – May 2027
- Notable awards: **C. David Naylor Scholarship** (\$20000) & **Arts and Science Scholar** (\$7500)
 - Extra-curriculars (high school included): **5-time re-elected president** of student council, **2-time editor-in-chief** (40 writers & 160 pages), and **Vice-President/organizer of 3 hackathons** (800+ participants).