

# Xin Lei Lin

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## TECHNICAL SKILLS

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**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

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### 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 Gunicorn/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

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### 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 (2<sup>nd</sup> 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 1<sup>st</sup> 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

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### 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).