# Yichen Cai

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• **Objective:** Experienced Master student in CS trying to find a research internship that allows me to utilize my skillset in machine learning, computer systems and software engineering to deliver state-of-the-art AI products and solutions.

### **EDUCATION**

University of Toronto (St. George), MSc in Applied Computing, CanadaSept 2024 – Dec 2025 (Expected)Master of Science in Applied Computing. Computer Science Stream.Sept 2024 – Dec 2025 (Expected)

University of Toronto (St. George), Computer Science Specialist, Canada

Honours Bachelor of Science. Specialized in Artificial intelligence (AI). **GPA 3.99/4.0** Awards: Dean's List Scholar 2020, 2021, 2022 and 2024. University of Toronto Scholar.

# PROFESSIONAL EXPERIENCE

Software Engineer - Zebra Technologies (Mississauga, ON.)

- Zebra System Applications Main Developer:
- Created Zebra Pass-Through Antenna setting app, enabling 2 modes of communication with Zebra forklift docks.
- Developed the heater control app that regulates device temperatures, making devices suitable for frozen warehouses.
- Collaborated with the PM and hardware team (AGILE) to use the GPIO drivers to control the antenna and heaters.
- Expanded the applicability of Zebra devices under more scenarios, broadening Zebra's target customer base.

#### Software Engineer - Orali Mobile (Toronto, ON.)

- Orali Money App Developer:
- Designed and implemented an Android money wallet app, aiming to promote financial literacy in Africa.
- Crafted user-friendly graphic UI for the 1 billion financially illiterate African to engage in formal economic activities.
- Established methods to communicate with the local banking system through USSD using the Hover APIs.
- Created an automated testing/deployment system through CI/CD tools to continuously test and update the app.

# PROJECTS & PUBLICATIONS

# Multi-Modal Side-Channel Attack on Keyboards with LLM Corrections (Toronto, ON.) Sept 2024 - Jan 2025

- Developed an audio+video model to predict keyboard presses from varying distances with overall 98% accuracy.
- Designed a new pipeline using STFT to segment audio and video of the keyboard presses dynamically.
- Created and coordinated the training of the muti-modal network for optimal performance.
- Fine-tuned Llama (3GB) model for context-aware error corrections with similar performance to GPT-40 (200GB).
- With 1.5% of the parameters, achieved 90% + the performance of GPT-40 in BLEU score and Levenshtein distance.

#### Team Lead - NVIDIA AICity Challenge Project, CVPR 2023 (Vancouver, BC.)

- Retail Product Recognition and Counting System:
- Created a project plan and scheduled tasks to ensure project completion within deadlines.
- Designed, implemented and trained a YOLO + StrongSORT backbone algorithm.
- Fine-tuned the model to recognize 116 distinct products from retail stores with an F1-score of 0.82.
- Achieved top 3 finish at CVPR 2023 NVIDIA AICity Challenge, published in CVPR 2023 proceedings (DACNet).

#### SKILL SETS

- Programming languages: Python (w/ PyTorch), C/C++, Java, SQL, Shell, Racket.
- Tools: Git, CI/CD, GCP, JetBrains.

### May 2022 - Jul 2023

#### Sept 2021 - Dec 2021

Dec 2022 - Jun 2023

Sept 2019 - Jun 2024