KAILIN LIU

C++/Python Developer and ML Researcher

Computer Engineering + PEY Co-op student, University of Toronto

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EDUCATION

University of Toronto — 9/2021 - 5/2026 (expected)

Bachelor of Applied Science and Engineering, minors in Engineering Business and AI, PEY co-op

- Major Courses: Calculus / Linear Algebra / Digital Systems / Data Structure and Algorithms / Software Communication and Design (C++)
- Minor Courses: Financial Accounting / Organizational Behavior / Market Analysis / Intro to Deep Learning (Python)

SKILLS

Technical Skills

- MS Office, Git, Linux system, Windows system
- Quartus, ModelSim, LTspice, NI MultiSim, CPU Lator
- 3DSMax, UE4

Certification & Achievements

- 2021 Fall - U of T Dean's Honour list
- 2021 - Jinan Foreign Language School Honour list

Languages

- English
- Mandarin

Computer Languages

- C (2 years experience)
  - Reversi AI chess, Simple music library, Automatic word finding game, Automatic money change program
- C++ (1.5 years experience)
  - tic-tac-toe game, Interactive Mapping Software
- Python (1 year experience), PyTorch
  - Handwriting recognition, Spam detection, Gesture classification
- Other Languages
  - Assembly by ARM, Matlab, Verilog, html

WORKING EXPERIENCES

Solution Architect Internship — Jinan, Shandong, China, 5/2023 - 8/2023

Huawei Technology Inc.

- Assisted Marketing Analyst by brainstorming solutions to update the yearbook resulting in the funding proposal to be approved.
- Performed the public cloud's general development and maintenance process successfully by using the computational resources of the developed chip.
- Applied the company's proposal design guidelines to proofread the solution design proposal draft resulting in the revised proposal to be approved.

Scenario Builder — Shanghai, China, 7/2019

Shanghai VR and AR Industry Alliance (VAIA)

- Performed the industry post-research through interviews with the corresponding workers and generated a report.
- Designed and completed a virtual reality scenario about a house as a team. 3DSMax software was used to make virtual scene modeling, and the UE4 virtual engine made the required light, shadow, and materials. Finally, virtual house construction was completed including internal (furniture) and external environment (sunshine, lighting, etc.), then obtained the certificate issued by the VR training enterprise.

PROJECT EXPERIENCES

Sentiment Analysis (Natural Language Processing), Python — Toronto, ON, CA, 6/2023 - 8/2023

Applied Fundamentals of Deep Learning, formly APS360 of University of Toronto

- Coordinated a team of four by analyzing the project requirements, assigning tasks and reviewing/revising their work resulting in the program to achieve 85% validation accuracy in machine learning.
- Used PyTorch and Google Colab to finish a three-sentiment analysis program which including data preprocessing, Glove word embedding, and LSTM model, used accuracy and loss to improve the model, resulted in high training/testing accuracy.

Interactive map based on GIS technology, C++ — Toronto, ON, CA, 1/2023 - 5/2023

Software design and communication, formly ECE297 of University of Toronto

- Used C++ language and Git to create an interactive map of Toronto, including features like searching, newers' tutorials, best routine for traveling by various data structures (e.g. Priority Queue, Unsorted Set and Map), and different algorithms (e.g. Optimization, Dijkstra), completed four milestones and reached a high grade of 80%.
- Enhanced user experiences by employing color selection theories to design the User Interface, and used the Made to Stick principles to revise the layout, resulting a grade of 71% in the graphical interview.

RESEARCH EXPERIENCES

Automated Essay Scoring and Comment Generation — Jinan, Shandong, CN, 2/7/2023 untill now

Shandong University of Finance and Economics

- Description
  - It developed a Python-based tool leveraging natural language processing for efficient essay evaluation. The system provides objective essay scores and auto-generates feedback, reducing manual assessment time, enhancing grading consistency, and offering actionable insights for writers to improve their content. The idea of this project is based on the original model of GPT-2 and GPT-3 and diffusion model.
- Contribution
  - Used Python to gather high school students' articles on a public website, and gathered data in CSV files for three grade levels by using developer tools of the website, Pandas library, and the website analyzed tools (e.g. BeautifulSoups) in PyTorch. Each file contains article content, article name, article type, article grade, and article comment. This dataset (around 20668 rows of data) was used for training and testing purposes in this project.