

# Yifan Lu

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🌐 EverythingTech

🌐 www.yifan.dev

## Education

BASc. Computer Engineering, *University of Toronto*  
Dean's Honour List | Excellence Award Scholarship  
CGPA 3.82 | Graduating in May, 2022

## Skills

**Languages:** C, C++, Python, Java, Go, Node.js,  
Bash, SQL, Assembly, PHP

**Libraries:** Flask, Django, Numpy, pandas,  
Tensorflow, PyTorch

**Tools:** Linux, Docker, git, svn, RabbitMQ

## Courses

- Algorithms and Data Structures
- Digital Signal Processing
- Software Engineering
- Operating Systems
- Machine Learning
- Programming Languages
- Computer Networks

## Work Experiences

**Software Developer** May 2021 - Current  
SAVI Networks Lab

- Implemented distributed network services with MQTT and AMQP (RabbitMQ)
- Developed a new network architecture designed for Internet of Things (IoT) devices. Achieved industry-leading low latency messaging service under high loads and large number devices
- Developed distributed cloud messaging applications deployed on public cloud

**Software Engineering Intern** May 2019 - Aug 2019  
Epson Canada Robotics R&D May 2020 - Apr 2021

- Developed industry leading machine learning (ML) algorithms for image instance segmentation, with accuracy of >95% and speed of <40ms
- Developed algorithm for industrial robots to pick up objects from bins with high reliability of > 90%
- Developed an advanced physics simulation and image rendering software with Python and C++
- Developed infrastructure software for compute resource management with Python and Bash
- Used caching techniques to improve performance by >2x to support high throughput data

**Software Developer**  
CAPE Lab

May 2018 - Aug 2018

- Developed data-driven algorithm for power demand prediction based on historical usage data
- Deployed software on site in power stations
- Achieved high reliability under 7x24hr operation
- Developed user-friendly GUI interface for easy remote management
- Designed and implemented programs for high-speed data acquisition and recording. Utilized a custom-designed anti-aliasing filter

## Projects

### Operating System From Scratch

- Wrote a fully functional OS from scratch in C
- Implemented virtual memory, threading, locks and semaphores, interrupts, user-kernel space separation, as well as a shell interface
- Optimized page replacement algorithm using Least Recently Used (LRU) to drastically improve hit rate

### Arcade Games Recreation

- Recreated 1970s Atari video games such as Pong and Asteroids with Java
- Implemented sprites with Swing toolkit
- Built with object oriented architecture

### Linux GUI Maps Navigation App

- Created a GUI app with C++ and the GTK library
- Used A\* graph traversal algorithm to improve navigation path finding speed
- Optimized display area to reduce UI flicker
- Improved user experience by showing only relevant details at appropriate times
- Used agile development methodology
- Wrote unit tests to test individual modules

### Web Image Database Management App

- Created a frontend and backend for an online photo database with PHP, HTML and JavaScript
- Designed user friendly UI for easy management including manage metadata, and set permissions
- Created an advanced user privilege system which restricts data access to non-authorized users

## Interests

- Vintage tech and tech history
- Linux enthusiast
- ML
- DIY robotics and home automation
- Programming
- Photography