

# Yun-Hsuan Chang

(412) 608-0838 | [yunhsua2@andrew.cmu.edu](mailto:yunhsua2@andrew.cmu.edu) | Website: [spongeie.me](http://spongeie.me) | LinkedIn: [www.linkedin.com/in/yun-hsuan](http://www.linkedin.com/in/yun-hsuan)

## EDUCATION

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**Carnegie Mellon University (CMU), School of Computer Science** Pittsburgh, PA  
*Master in Information Technology Strategy, Software and Networked Systems Track* Dec 2020

*Coursework:* Distributed Systems, Parallel Computer Architecture, Search Engines, DevOps, Information Security, Computer Systems, Database Systems (current), ML with Large Datasets (current), Computer Networks (current)

**National Taiwan University (NTU)** Taipei, Taiwan  
*Bachelor of Business Administration in Information Management, Minor in Economics* Jun 2019

## SKILLS

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**Programming Languages:** C/C++, Java, Python, SQL, x86 assembly, MATLAB

**Parallel Computing:** CUDA, MPI, OpenMP, ISPC

**Machine Learning:** Spark, Numpy, Databricks

**DevOps:** Git, AWS, Azure, Jenkins, Maven, Kubernetes, Docker, Ansible

**Web:** Django, PostgreSQL

## SELECTED PROJECTS

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**Continuous Authorization Service, Capstone Project, CMU Software Engineering Institute** Feb 2020 – July 2020

- Built an open-source security authorization hub service, which integrates two static analysis tools with **Jenkins CI** pipeline, shows security issues filtered by user-selected RMF security rules, and automates Git issue management
- Developed the service with **Django** and **Postgre** and implemented a Jenkins plugin which is built in **Maven** to integrate the service to CI pipeline and deployed on **Azure Kubernetes Service** and **AWS**
- Completed quality assurance using Jenkins CI pipeline with Django unit testing, SonarQube and Docker-compose which achieved 86% code coverage [Azure, AWS, Kubernetes, Docker, Jenkins, Maven, Django, Postgre] [[code](#)]

**File-Caching Proxy for Distributed System, CMU** [Java] Feb 2020

- Designed and implemented an **AFS-like** file caching proxy which emulates **C file operations** such as read and write
- Applied LRU policy for whole-file caching to improve throughput and provide scalability, and utilized **check-on-use** protocol to resolve heavy network traffic
- Implemented one-copy semantics with open-close session semantics to ensure concurrent file access, which could successfully handle 7 concurrent file access with 2 proxies

**Large-scale Text-based Search Engine, CMU** [NLP, Java, Lucene] Jan 2020 – Apr 2020

- Developed a search engine on a corpus of 500,000+ documents based on **Lucene** written in Java
- Supported exact match models and best match models including BM25 and Indri
- Trained a pairwise **SVM** with 18 features for LeTor, which increased the precision by 0.18
- Utilized **query expansion** according to relevance feedback and supported intent-aware **diversified search**

**Scalable Web Service, CMU** [Java, Autoscaler] Mar 2020 – Apr 2020

- Developed a **4-tier** scalable online shopping web service which supports browsing and purchasing requests, contains front-tier servers, application servers, cache, and database
- Implemented **auto-scaling** for front-tier and app servers based on request incoming rate and availability of servers, and supported the combination of constant, uniform, and exponential request, which robustly served 87% requests for a rate of 485 requests per minute with 747 seconds VM time

**Parallelized Text recognition Neural Network, CMU** [C, MPI, CUDA] [[code](#)] Apr 2020 – May 2020

- Parallelized a **neural network** for alphabet detection by utilizing **MPI** threads for data parallelism and **CUDA** threads for matrix operations
- Achieved a 4x speedup when training a model with 6 hidden units and 100 epochs on a dataset containing 9000 entries when utilizing 8 processors

## WORK EXPERIENCE

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**Research Assistant** [Django, Python, Selenium] Taipei, Taiwan  
*Business Analytics and Economic Impact Research Lab, National Taiwan University* July 2017 – June 2018

- Developed a Financial Environment Trend Monitoring Platform for an insurance company in Taiwan
- Collected public financial reports and news through Selenium, ranked the data by user-selected relevant terms, and displayed the top 30 results, which helps the company evaluate financial status of insurers

**Software Engineering Intern** [Node.js, Python] Hsinchu, Taiwan  
*Information and Communications Smart Home Lab, Industrial Technology Research Institute* July 2016 - Aug 2016

- Tested and built Facebook and Telegram chatbots for a cross-platform smart home voice assistant app