

# JUNSHANG JIA *(GreenCardHolder)*

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## EDUCATION

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### Carnegie Mellon University

Aug 2023 - Expected Dec 2024

Master of Science in Information Networking, GPA: 4.0/4.0

Relevant Coursework: 15213 Computer Systems(C), 10601 Machine Learning(Python), 15440 Distributed Systems(Go)

### University of Pittsburgh

Aug 2019 - May 2023

Bachelor of Science in Computer Science, GPA: 3.9/4.0

Relevant Coursework: Operating Systems(C), Artificial Intelligence(Python), Functional Programming(Haskell)

## SKILLS

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**Programming Languages:** Java,C/C++,Python(PyTorch,Pandas/Numpy), JavaScript,TypeScript,SQL,HTML/CSS, Go

**Web Technologies:** React.js, Node.js, Angular, NoSQL, MySQL, MongoDB, PostgreSQL, Spring Boot, Flask

**Tools:** Linux, Git, Bash/Shell, AWS, Azure, Google Cloud, VS Code, Docker,Github Actions, CI/CD

## WORK EXPERIENCE

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### Software Developer

May 2022 - Sep 2022

Kitzes Lab

*Pittsburgh, PA*

- Executed research on leveraging convolutional neural network models for the identification of wildlife species in the field.
- Applied supervised learning techniques to meticulously train machine learning models on audio data, enabling the accurate recognition of bullfrog sounds in natural environments by using **Pytorch**.
- Contributed an **open-source machine learning library**, OpenSoundscape, that allows users to select the magnitude or power of the Spectrogram and generate specific formats of annotation files employing **Python**.

### Software Developer Intern

Jun 2021 - Sep 2021

Ericsson

*Beijing, China*

- Conducted and accomplished a cutting-edge, web-based management system to optimize product development lifecycle of 5G radio base stations and increase overall product quality by leveraging **Java**.
- Designed an ER diagram based on thorough product documentation, accomplishing a **MySQL** database with optimized indexing and schema design, resulting in a **40%** increase in database query performance.
- Developed a dynamic web application leveraging **Spring Boot** framework and **RESTful APIs** allowed users to manage millions of data by CRUD operations.
- Engineered highly interactive frontend visual interfaces by **React** and Antd framework,incorporating dynamic features to enrich user interactions in search and information checking behaviors.

## PROJECTS

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### Raft Protocol

- Implemented the leader election mechanism as per the Raft protocol, ensuring that the system could automatically select a leader to coordinate and manage data replication by **Go**.
- Designed and implemented the log replication process, ensuring uniform data consistency across all cluster nodes and committing log entries upon acknowledgment by a majority of nodes.
- Establish clear and structured **RPC** procedures for leader election, log replication, and heartbeat communication.

### Memory Allocator

- Designed and implemented a memory allocator from scratch for efficient memory management using **C**.
- Applied various strategies(segreated free list, explicit lists, and memory alignment) to mitigate fragmentation.
- Created a robust and efficient memory allocation algorithm outperformed existing solutions by improving throughput memory utilization by an impressive **70%**.

### Bitcoin Miner

- Designed and developed a distributed system using a custom Live Sequence Protocol (LSP) to efficiently perform a compute-intensive task – Bitcoin mining by **Go**.
- Introduced a time-triggered epoch system, bolstering robustness through periodic transmission of heartbeat messages.
- Optimized a **load balancing** system to ensure both efficiency and equitable task allocation, taking into account parameters such as request size and order of arrival.