

# JUNSHANG JIA

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## EDUCATION

### Carnegie Mellon University

Aug 2023 - Expected May 2025

Master of Science, Computer Science(System)

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

15618 Parallel Programming(CUDA), 15719 Advanced Cloud Computing, 15645 Database Systems(C++), Functional PL(Haskell)

### University of Pittsburgh

Aug 2019 - May 2023

Bachelor of Science in Computer Science

## SKILLS

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

**Frameworks:** 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, Terraform, Jenkins

## WORK EXPERIENCE

### Software Developer Intern

May 2024 - Current 2024

Capital One

*Dallas, TX*

- Developing Full Stack Web application using NestJS and GraphQL

### Software Developer

May 2022 - Sep 2022

Kitzes Lab

*Pittsburgh, PA*

- Led the development of a **Python**-based machine learning pipeline using **Convolutional Neural Networks (CNNs)** with **PyTorch, Pandas, Numpy**, and **Jupyter** achieving a breakthrough 20% improvement in wildlife species identification accuracy.
- Architected a web based frontend with **React.js, Apollo, Redux**, and **Bootstrap**, along with a **Flask**-based **GraphQL** API, enhancing user interactivity and data visualization capabilities.
- Implemented **Docker** containerization and orchestrated deployment with **Kubernetes** on **AWS Elastic Beanstalk**, leading to a 30% increase in deployment efficiency and scalability.
- Pioneered significant contributions to OpenSoundscape, an **open-source machine learning library**, empowering users to precisely manipulate Spectrogram power and generate **Python**-based annotation files.

### Software Developer Intern

Jun 2021 - Sep 2021

Ericsson

*Beijing, China*

- Spearheaded the development of a comprehensive **Java** web management system, employing **Microservices** architecture and **API Gateway** pattern, optimizing the product development lifecycle and catapulting overall product quality by **25%**.
- Crafted an Entity-Relationship (ER) diagram aligned with comprehensive product documentation, resulting in the development of a **MySQL** database featuring streamlined indexing and an optimized schema design.
- Architected robust **backend** solutions with **Spring Boot, Redis** for caching and session management, and **Apache Kafka** for streaming realtime data, contributing significantly to a **40%** enhancement in software infrastructure scalability.
- Innovated frontend interfaces using **React** and **Antd**, resulting in a **40%** increase in user engagement and enriched interactions for search and information checking behaviors.
- Deployed the application on **Azure App Service** with integrated **Azure DevOps** for CI/CD, and pioneered the use of **Azure Cognitive Services** for advanced data analytics, further streamlining workflows and reducing average deployment time by 46%.

## PROJECTS

### Raft Protocol

- Spearheaded the implementation of the leader election mechanism, adhering to the Raft protocol in **Go**, resulting in an advanced automated leader selection process, enhancing data replication efficiency by 15%. Integrated **etcd** for distributed key-value storage.
- Engineered a sophisticated log replication mechanism, ensuring high consistency and reliability across cluster nodes. Achieved 99.5% data consistency by implementing a majority acknowledgment protocol using **gRPC** for streamlined communication.
- Implemented RPC procedures for leader election, log replication, and heartbeat checks, utilizing **gob** for efficient encoding

### Bitcoin Miner

- Conceptualized 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.

### Metis

- Developed Metis, a full-stack web application designed to help people better judge whether information is misinformation. Implemented user authentication using **JWT** and **OAuth2.0**, ensuring secure and convenient user access.
- Constructed an interactive frontend using **React.js**, integrated with **D3.js** and **Chart.js** for creating visualizations.
- Created a robust backend with **Flask**, managing data with a **MongoDB** database. Deployed the application on **AWS Lambda** and **S3**, ensuring scalability and reliability.