Sean Nian

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Education

San Jose State University — San Jose, CA
Bachelor of Science in Computer Science (Honors); GPA: 3.94/4.0 — *Aug. 2021 – Dec. 2024*

Research

Machine Learning Systems for Containerized Applications — Aug. 2024 – Present
PI: Dr. Genya Ishigaki — *San Jose State University*

- Coordinated edge computing resources within a Kubernetes environment to enhance system performance
- Deployed a system to modify Knative manifests, enabling resource allocation control based on real-time needs
- Designed a reinforcement learning-based policy to scale pods, considering latency and resource utilization

Optimizing Tiny Machine Learning Systems — May 2024 – July 2024
PI: Dr. Arthi Padmanabhan — *Harvey Mudd College*

- Researched optimizing computation for running large ML models on low-power edge devices (funded by NSF)
- Built a distributed system for TinyML applications using ESP32-S3 devices, enabling efficient on-device processing
- Deconstructed ResNet and CIFAR models, distributing intermediate computations via Bluetooth Low Energy
- Analyzed network overhead and energy efficiency to make the system more fault-tolerant and low energy
- Presented findings at a joint poster session with institutions HMC, USC, Pomona, UCR, and CSUN
- Authored a 6-page paper on findings, challenges, and potentials, accepted to INTERACT at ACM/IEEE SEC 2024

Decentralized Social Media Networks via ActivityPub — Jun. 2023 – May 2024
PI: Dr. Ben Reed — *San Jose State University*

- Explored decentralized social media networks by analyzing the ActivityPub Protocol's architecture
- Developed moth, an open-source Java ActivityPub server for Mastodon using Spring WebFlux and MongoDB
- Implemented key RESTful API handlers with JSON payloads to facilitate robust cross-server communication
- Authored a 5-page research paper analyzing the decentralized protocols of Mastodon and ActivityPub

Publications

INTERACT Workshop, ACM/IEEE SEC 2024 — Dec. 2024
An Analysis of Network Overhead in Distributed TinyML (Paper, Accepted) — *Rome, Italy*

Presentations

INTERACT Workshop, ACM/IEEE SEC 2024 — Dec. 2024
An Analysis of Network Overhead in Distributed TinyML (Presentation) — *Rome, Italy*

Posters

Harvey Mudd College Summer of CS Research Seminar — Jul. 2024
An Analysis of Network Overhead in Distributed TinyML (Poster) — *Claremont, CA*

Other

2025 IEEE Netsoft — Jan. 2025
Dynamic Autoscaling in Knative Using Deep Reinforcement Learning (In Submission) — *Budapest, Hungary*

arXiv Preprint — Feb. 2024
Building a Mastodon Compatible Java Server for ActivityPub (Archived) — *San Jose, CA*

Other Experience

LAEP Artificial Intelligence QA Testing Intern — Nov. 2023 – May 2024
San Jose State University — *San Jose, CA*

- Explored AI methods to expedite research paper writing, focusing on accelerating literature reviews
- Performed extensive testing on a research paper AI tool, evaluating its performance by assigning scores to each test
- Compiled datasets to fine-tune a GPT-3.5 Turbo model for improved content analysis
- Documented key findings, finding which models achieved the best results

Awards & Honors

President's Scholars, San Jose State University	Fall 2021, Fall 2023, Spring 2024
Dean's Scholars, San Jose State University	Spring 2022, Fall 2022, Spring 2023
Gail Fullerton Endowment, San Jose State University	Fall 2021
XILINX Scholarship, XILINX	Summer 2021
AP Scholar With Distinction, College Board	Summer 2021

Leadership & Activities

Event Coordinator, SJSU ACM CS Chapter — Spring 2023 - Present

Skills

Languages: Java, Python, C, C++
Libraries: pandas, NumPy, Matplotlib, Seaborn, TensorFlow, PyTorch
DevOps: Git, Docker, Kubernetes, Maven, UNIX Shell Scripting, Linux