

# Jay Joshi

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## Education

<b>University of Southern California</b> - Master of Science in Computer Science	<b>Aug 2022 - May 2024</b>
<b>University of Pune, India</b> - Bachelor of Engineering in Computer Engineering	<b>Jul 2018 - May 2022</b>

## Skills

Coursework	Algorithms, Deep Learning, Machine Learning, Web Technologies, Foundations of AI, Databases
Expertise	Machine Learning, Algorithm Analysis, Statistics, Git, Github
Languages	Python, JavaScript, Java, C++, Object Oriented Programming, Android
Cloud & DB	Google Cloud Platform, Firebase, MySQL, MongoDB, Oracle DB
ML	PyTorch, Transformers, LLM, NLP, Hugging Face, CNN
OS & Web	Linux, MacOS, Windows, Angular, Nodejs, Flask, Bootstrap, HTML, CSS

## Work Experience

### ML Engineer, Graduate Research Assistant - ISI, USC Nov 2022 - Jan 2023

- Collaborated with a team of 5 researchers to develop an intelligent chatbot system for detecting and mediating hate speech in public forums, facilitating conflict resolution and prevention
- Trained and assessed performance of fine-tuned cross-lingual models (XLM) for Sequence Classification on 15+ datasets leveraging PyTorch and 3 Hugging Face libraries (transformers, datasets, evaluate)
- Devised an efficient ML pipeline utilizing Python scripts and Jupyter for benchmarking in-house models against state-of-the-art models, accelerating streamlined evaluations. Delivered the pipeline in under 60 days.

### System Design and Software Engineer, Founder - Food Ready Sep 2021 - May 2022

- Conceived and delivered an efficient solution by building 2 full-fledged apps for students to pre-order canteen meals, saving customer time and maximizing revenue for business owners
- Conceptualized end-to-end system design and implemented the Android - Java app as a POC, leveraging Firebase's suite for the backend; coordinated with 7 members for overall software development
- Collaborated with a college canteen, a restaurant chain, and a local diner to deploy the solution, resulting in a 40% increase in revenues and a 1.5x boost in customer satisfaction while streamlining operations

## Projects

### Makemore - An auto-regressive character level language model [\[link\]](#) Feb 2024 - Apr 2024

- Utilized PyTorch to develop a probabilistic sequence model, emphasizing tensor operations and broadcasting to refine accuracy. Gained insights on mapping complex real-world problems into the deep-learning domain
- Optimized model performance and computational efficiency with advanced techniques including custom backpropagation, batch normalization, hyperparameter tuning, and in-depth loss function analysis.

### Micrograd - A tiny autograd engine [\[link\]](#) Apr 2023 - May 2023

- Implemented backpropagation (reverse-mode autodiff) over a dynamically built DAG (directed acyclic graph) and a small neural networks library on top of it with a PyTorch-like API
- The DAG operates over scalar values, i.e. we chop up each neuron into all of its individual tiny adds and multiplies, but this is powerful enough to build deep neural nets doing binary classification

### Microservice orchestration using Kubernetes [\[link\]](#) Apr 2024 - May 2024

- Designed a microservice system for converting videos to MP3s using Docker, python, flask, MongoDB, and MySQL. Leveraged Kubernetes for container orchestration. Facilitated storage of large files using GridFS.
- Authenticated clients using JWTs. Utilized ingress to connect clients from the internet to the Kubernetes cluster. Implemented a notification service to update users using Google Mail's SMTP server.

## Volunteer Experience

### Volunteer Developer - Ivy May 2023 - Aug 2023

- Created backend APIs for Ivy, simplifying ML code conversion across six popular Python frameworks, volunteering to Ivy's mission of unifying AI technologies

### Joint Secretary - Compsa Jul 2019 - Aug 2021

- Managed transition of club events from in-person to virtual during lockdown with the help of 50+ members
- Led workshops on Linux (5 day) and Github (2 day) helping students gain relevant exposure in lockdown