Sri Ujjwal Reddy Beereddy

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Education

Arizona State University (4.0 GPA) Tempe, AZ

Bachelor of Science in Computer Science (Software Engineering), Minor in Entrepreneurship *Aug 2022 – May 2026*

Experience

Software Engineering Intern (Machine Learning) Jul 2024 – Present

Geometric Media Lab *Tempe, AZ*

- **Developed a hybrid machine learning pipeline** combining **k-means clustering** for unsupervised filtering and a supervised neural network for gunshot detection, enabling accurate real-time analysis in forest environments.
- **Increased detection accuracy from 20% to 80%** by processing a dataset of **10+ hours of audio**, extracting peaks using **Librosa**, and refining the model through iterative training on labeled data in **Google Colab**.
- **Optimized deployment on Raspberry Pi** running Raspbian OS by tailoring the pipeline to address hardware constraints, integrating a microphone, and ensuring seamless operation in resource-constrained environments.
- **Implemented a feedback loop** to improve model accuracy by incorporating newly collected data, enhancing noise differentiation, and refining predictions for challenging environmental conditions.
- **Streamlined preprocessing and scalability** by designing a robust audio analysis pipeline that can handle diverse noise patterns and dynamic forest conditions.

Software Engineering Intern (Machine Learning) Jan 2023 – Present

ASU Biodesign Institute *Tempe, AZ*

- **Created an end-to-end pipeline** for DNA-PAINT data analysis using ONI microscope outputs, integrating k-means clustering and custom algorithms to track and analyze the movement of DNA robots on origami structures over time.
- **Reduced analysis time from 4 hours to 10–30 minutes per image** (containing 2000+ origami structures) by automating detection and movement analysis of DNA robots, enabling researchers to process large datasets efficiently.
- **Enabled high-impact research capabilities** by introducing machine learning to replace non-ML workflows, providing granular movement data and population-level insights that were previously unattainable with traditional nanotechnology software.
- **Improved accuracy and scalability** by combining k-means clustering for unsupervised detection of robots and supervised techniques for movement prediction, ensuring robust tracking under complex conditions.
- **Streamlined research processes** by calculating critical metrics such as the ratio of distance from the start to the goal and robot progression for every 2-hour interval, producing actionable data for DNA nanotechnology advancements.

Software Engineer Aug 2024 – Present

Mesa Historical Museum *Tempe, AZ*

- **Designed and developed an interactive website** for the Mesa Historical Museum entrance using **React** and **Three.js** to digitize museum materials, enhance user engagement, and provide visitors with an immersive learning experience about the museum's people and places.
- **Increased visitor engagement and satisfaction by 20%** by implementing interactive features and collecting feedback to iteratively improve the user experience.
- **Ensured scalability and usability** by leading a team of 7, delegating roles for documentation, design elements, frontend engineering, software development, and testing to ensure high-quality output.
- **Streamlined content management** by integrating a database management system and creating a user manual to enable non-technical staff to easily manage repository content.
- **Improved website performance and responsiveness**, maintaining a response time of under 1 second through optimized code and efficient resource management.
- **Enhanced project outcomes** by combining technical leadership and collaborative planning to deliver a robust, interactive solution that aligns with museum goals and provides a seamless user experience.

Software Engineer Jan 2024 – Present

Software Developers Association (SoDA) *Tempe, AZ*

- **Reduced test case file upload time by 98%** (from 10 hours to 10 minutes) by developing a **Selenium-based web scraper** to automate test case uploads for SoDA's annual code challenge, ensuring seamless handling of 200+ test case files across multiple problems.
- **Enhanced operational efficiency by 50%** by building a membership management system using a **Flask backend** and **Next.js frontend**, enabling real-time updates for points tracking, membership access, and leaderboard transparency for **600+ active members**.
- **Improved event attendance by 50%** by streamlining organizational processes and offering transparent, real-time access to membership benefits, fostering higher engagement within the community.
- **Built a collection of workshop repositories** covering topics like **Flask**, **YOLO**, **OpenCV**, and **Python basics**, including code files, documentation, and slides to train beginner and future software engineers, ensuring sustainability of learning resources.
- Led teams to win **4 hackathons**, including the **Most Innovative Solution Award** at **Devil's Invent** and the **Sustainable AZ Spark Challenge**, sponsored by **Honeywell, DAASH, and ASU**, by delivering impactful solutions in automation, sustainability, and scalable technology.

Projects

Amano – Emotion-Based Song Recommendation System | *Flask, Spotify API, OpenAI API, AWS EC2*

* **Improvised Spotify's song recommendation system** by developing a backend using **Flask hosted on AWS EC2** that integrates with the **Spotify API** to provide personalized song suggestions using **Reinforcement Learning**.
* **Enhanced user experience** with a real-time **ChatGPT LLM chatbot** that analyzes mood and sends data to the reinforcement model for dynamic song recommendations, functioning like a personal DJ.

ImageInsight – Web-Based Data Analysis Tool | *Django, SQLite, Unsupervised ML, Data Visualization*

* **Increased research productivity by 40%** for postdoctoral researchers by designing a web tool using **Django** and **Unsupervised machine learning**, which reduced **image analysis time from hours to minutes** and automated complex data analysis tasks.

Mine Alliance – Fullstack Sustainable Mining Website | *Next.js, Flask, SQLAlchemy, AWS, OpenAI GPT-4, TailwindCSS*

* **Reduced environmental assessment response times by 40%** by leading the development of a **fullstack platform** that integrated **ChatGPT-4 API** for mining site impact assessments.
* Utilized **SQLAlchemy, Flask, AWS EC2**, and **geospatial mapping with Leaflet**, resulting in increased stakeholder engagement.

Market Anomaly Detection (MAD) | *Python, Streamlit, Scikit-learn, GEMINI, Jupyter Notebook*

* **Developed an anomaly detection system** to identify potential financial market crashes, utilizing **Streamlit** for an interactive user interface and **Scikit-learn** for model training and tuning.
* **Enabled user-driven customization and improved performance** with features like **GEMINI-powered chatbot**, automated model tuning, and support for supervised and unsupervised learning pipelines.

Technical Skills

Languages: Python, C/C++, Java, JavaScript, SQL, HTML, CSS
Frameworks & Libraries: Flask, Django, React, TensorFlow, PyTorch, scikit-learn, OpenCV, three.js, pandas, numpy
Tools & Environments: Streamlit, Docker, AWS, Linux, Git, GitHub, Selenium, Google Colab, Jupyter Notebooks
Machine Learning & AI: Neural Networks, GEMINI API, Deep Learning, Reinforcement Learning, Unsupervised Learning