Sai Ravi Teja Gangavarapu

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EDUCATION

Kennedy High The Global School **2018 - 2020**
A-Levels - Maths, Physics and Chemistry(AAB grades) *Hyderabad, IN*
Mahindra University **2020 - 2024**
B.Tech, Computer Science and Engineering *Hyderabad, IN*
University of Florida **Spring 2024**
Senior Certificate Student, CISE Department, UFID: 10504370, 4.0/4.0 until date. *Gainesville, FL*
Courses: Computer Graphics, Analysis of Algorithms, Advanced Data Structures, UX Design

WORK EXPERIENCE

Catalog **Apr 2023 – Present**
SDE Intern *Hyderabad, IN*
- Developed efficient ways to fine-tune LLMs (Llama & BERT) and train a custom NER model by parallelly generating training datasets using LLMs. The goal was to map user input to a specific API endpoint by finding the parameters.
- Implemented a real-time big-data analytics program utilizing FastAPI and MongoDB to observe crypto token volume, facilitating data-driven insights. Also, I developed and deployed a dashboard to monitor garden.finance
- Built a robust leaderboard and deterministic reward system to reward each user based on their txs and worked on atomic swaps using Golang, and Postgresql and deployed them on AWS EC2 instances for garden.finance.
- Facilitated $200M+ trading volume over 30 days.

Mahindra University | *submitted to [IEEE WCCI 2024](#)* **Oct 2022 – Jan 2024**
Mentors: Dr Arya Kumar Bhattacharya and Prof. Prafulla Kalapatapu
Research Assistant | feature extraction, signal processing, evolutionary algorithm, python, OOP *Hyderabad, IN*
To Automatically create Emotion inhibiting Musical Compositions using AI (Mentors: Dean of Research and HOD)
- Utilized music information retrieval (MIR) techniques to retrieve low-level features for emotion classification.
- Developed an Evolutionary Algorithm to determine amplitude and phase values in the Fourier transform equation, aiming to generate emotion-specific sounds. Utilized signal processing techniques.
- Integrated Self-Organizing Maps and Fuzzy C-means clustering into the fitness function for improved EA.
- Developed efficient pipelines for audio feature extraction for the fitness function of the EA.
- In addition, submitted an IEEE Engineering & Transactions journal on utilizing deep learning to uncover economic insights from E-Commerce sites. (Utilized semantic clustering and Bayesian networks)

PROJECTS

Song Similarity Using Unsupervised Deep Learning | *Mentor: Prof. Prafulla Kalapatapu*
- The goal was to explore different methods for song similarity and optimize for accuracy.
- Employed an optimized ALI GAN model by autoencoding noise vectors rather than data items, reducing mode collapse. Then, generated embeddings for spectrograms of classified Indian Classical music.
- Conducted clustering analysis using the embeddings and compared the results with PCA embeddings.
- Visualized the clustering performance through t-SNE plots, providing insights into the effectiveness of the GAN model in capturing song similarities.

Project RECON: Raspberry Pi Engineered Cluster Over Net **|** *Distributed Systems* **|** *Mentor: Prof. Praveen Alapati*
- To provide an accessible and practical distributed computing platform for students.
- Setup and worked on an Octa Raspberry Pi 4B Compute Cluster. Involves configuration of VLANs, GlusterFS

for distributed storage, Slurm with OpenMPI for Parallel Computation and LDAP for cross-node user authentication.
- The Project was funded $2000 by the university. It is being used by over 400 students for coursework.

RateMUProfessors Site | *React.js, Software Architecture, MongoDB, FastAPI, node.js*
- Designed and and built a full-stack web application with an Authentication system, from the ground up.
- Students could provide feedback, reviews and ratings on courses and instructors.
- The backend is made to be scalable and involves load balancing, rate limiting and JWT authentication.
- It includes past exam papers specific to courses, and we achieved a 10 for the project in the SWE course.

Minor Projects | *Tensorflow, ML, blockchain, Python, vue.js,*
- Designed and implemented an LSTM-based music generation tool using Tensorflow v2.0, preprocessing data, developing a recurrent neural network, and generating coherent piano music in MIDI format.
- Ray Tracing Engine from the ground up using C++. Sentiment Analysis on the Ukraine War.
- A UDP-based blockchain implementation from the ground up | Music-based interactive to-do list site.
- RSA-based end-to-end encrypted chat room using sockets | Video games on Godot. | Another FullStack Proj!

Gas Monkeys Racing Electronics Team Member (BAJA SAE) | *IOT, Raspi Pico*
- Worked on Data Acquisition using various sensors such as Accelerometers, RPM sensors, etc
- Used i2c to gather data from all sensors. Made a custom circuit to gather Engine RPM from the spark plug.
- Displayed critical info such as speed, no. of laps, etc on an LCD display for driver's convenience.
- Efficient wiring of all electrical and electronic components such as Engine kill switch, brake lights, headlights, fog lights and horn.

Audio Reactive Visuals with Nvidia StyleGan | *Tensorflow, CUDA, Docker*
- Deployed a custom StyleGAN3 model on NVIDIA's DGX-1 with 8 V100s to train over 5 days for DJ set background visuals.
- Scraped 10000s of landscape images from different sites. Implemented transfer learning between Landscape and Flower models. Applied LibROSA to synchronize visuals based on spectral audio features.
- Produced generative visuals making memorable audio-visual experiences during my DJ set.

CORE COURSES, CERTIFICATIONS, SKILLS & INTERESTS

- **Core courses**: DS, Algorithms, HPC, Distributed Systems, MPI, Cryptography and Network Security, ML, Deep Learning, NLP, Computer Networks, Big Data and DBMS, Graphics
- **Certifications:** ACM workshop(HPC and AI computing, IIT Palakkad), Other certs on Linkedin.
- **Languages:** C, C++, PYTHON, GoLang, JS, GDScript, Bash, nasm
- **Tools:** OpenGL, Linux, Git, React.ts, express.js, Docker, OpenMP, Postgres, Raspberry Pi, PyTorch
- **Interests:** Computer Graphics, High-Performance Computing, Deep Learning Research, Music Production
- **Spoken Languages:** English, Telugu, Hindi
- **Extra Curriculars:** President at **Enigma**, the computer science club, fostered a community to inspire and instil passion in 2500 individuals for the field. Also led the music team for 3 different feature films as a music director.
- Orchestrated Gamecon, a game dev/Esports competition in collaboration with Ubisoft. Hosted an AI visual DJ set and several tech workshops as CS club lead. Also, I produce electronic music

ACHIEVEMENTS

First Place, Talentmapp Hack4Hire Hackathon (400 participants) **|** *MongoDB, flask, React.js, ChatGPT*   **Mar 2023**
- Built a task-tracking application that enables users to add tasks, set deadlines, assign priorities, and receive reminders for pending tasks.
- Leveraged LLMs to provide users with intelligent task suggestions based on their previous activity.
- I led the team, designed the application's architecture, assigned specific tasks to each member, programmed the complete secure backend, including the API and NoSQL database, and deployed it in 8 hours.

First Place, Noderunner Hackathon at Catalog (50 teams) **|** *flask, multithreading*   **Mar 2023**
- Built a cluster of nodes that automatically communicate with each other and participate in the raft consensus protocol from scratch within 24 hours. Utilized multithreading for efficient communication between nodes.

First Place, Aether Gamejam | *Godot, GDScript*   **Jan 2024**

Finalist in the NVIDIA student ambassador program.