Sai Ravi Teja Gangavarapu

gangavarapus@ufl.edu ❖ (352)721-1233 ❖ Gainesville, FL ❖ Portfolio

EDUCATION

University of Florida **Jan - May 2024 | Aug 24 - Dec 2025**
Senior Certificate + Master's in Computer Science, CISE Department *Gainesville, Fl*
- GPA: 4.0/4.0 | Courses: Analysis of Algorithms, Advanced Data Structures, Computer Graphics, UX Design

Mahindra École Centrale **2024 - 2024**
B.Tech, Computer Science and Engineering *Hyderabad, IN*

Kennedy High The Global School **2018 - 2020**
A-levels - Mathematics, Physics and Chemistry (AAB grades) *Gainesville, Fl*

WORK EXPERIENCE

Tapsta **Jun 24 – Present**
Software Engineer | Nextjs, React Native *Remote*
- Building a social media app that connects students with merchants. Built a full stack waitlist page.

University of Florida **Feb 24 – Jun 24**
Research Assistant | Transformers, Clustering Techniques *Gainesville, FL*
- Conducted research on applications of genomic foundational models under the guidance of Dr. Xiao Fan.
- Investigated the use of nucleotide variance and other advanced techniques to predict rare diseases

OneAIclick: a private LLM pipeline abstraction tooling **Jun 24 – Present**
Founding Engineer | Fine-tuning LLMs, Local LLMs, RAG, Agents, Nextjs, Python, sockets *Remote*
- Building private LLM pipeline abstraction tooling for various tasks like fine-tuning, Agentic RAG and more.

Catalog.fi **Apr 2023 - Dec 2024**
SDE Intern | Transformers, LLMs, Golang, Postgresql, Nextjs *Hyderabad, IN*
- Developed efficient ways to automate the fine-tuning of open-source LLMs. Finedtuned a custom **BERT** model by parallelly generating training datasets using LLMs. The goal was to map user input to a specific API endpoint by also finding the corresponding parameters. Taught LLMs to use APIs.
- Implemented a real-time 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, worked on **atomic swaps** using Golang, and Postgresql, and deployed them on **AWS EC2** instances for garden.finance.
- Facilitated **$150M+** trading volume over 30 days.

Mahindra École Centrale | accepted in IEEE WCCI 2024 conference **Oct. 2022 – Present**
Research Assistant | PyTorch, signal processing, gen ai, MIR, music, deep learning, data augmentation *Hyderabad, India*
- Utilised music information retrieval (**MIR**) techniques and developed an **Evolutionary Algorithm** with **Self-Organizing Maps** and Fuzzy C-means clustering to generate emotion-specific sounds by solving for the Fourier transform coefficients and then performing Fourier synthesis.
- Developed efficient pipelines for audio feature extraction and an optimized ALI **GAN** model (using PyTorch) to generate embeddings for Indian Classical music **spectrograms**, conducting clustering analysis and visualization (**TSNE**) to explore song similarity methods and optimize accuracy.

SELECTED PROJECTS

Genetic Algorithm Optimization of CNN for Music Genre Classification| *PyTorch, Keras | Mentor: Prof. Prafulla*
- Employed genetic algorithm to optimize Convolutional Neural Network (CNN) architecture for music genre classification using spectrogram encodings.

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.

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.

Co-Write: AI-Assisted Learning Platform | *Nextjs, FastAPI, Postgresql, Langchain, ANNs* **Feb 24 – May 24**

- Developed an open-source AI-powered platform that provides targeted assistance to students within professor-defined boundaries, promoting academic integrity and enhancing the learning experience.
- Built the full-stack application using Next.js, Tailwind CSS, FastAPI, MongoDB, and integrated an **RAG** model.
- Designed and built key features, including a custom RAG model, assignment creation with AI limitations, a text classifier for determining assistance type, and targeted AI assistance while maintaining academic integrity.
- Built the complete prototype in under 24 hours.

Other Projects | *PyTorch, Keras, 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. RateMUProfessors
- Wrote a GAN from scratch to understand the model better before starting research on the topic.
- Built a U-Net to generate images from pure noise using the denoising diffusion process, to understand the neural network architecture. Developed a text-to-image generation model by integrating CLIP. Utilized transfer learning to personalize an automatic doggy door system for my dog, brownie. Fine-tuned Gemini for manim.
- Ray Tracing and Rendering Engine from scratch using C++ OpenGL. Sentiment Analysis on the Ukraine War.
- A UDP-based blockchain implementation from the ground up | Samplebox desktop app ~ 200 hits
- RSA-based end-to-end encrypted chat room using sockets | Video games on Godot. | Another FullStack Proj!
- Trained a custom StyleGAN3 model on NVIDIA's DGX-1 to generate audio-reactive landscape visuals for my DJ set, utilizing transfer learning and synchronizing visuals with spectral audio features using LibROSA.
- Developed a data acquisition system using IoT and Raspberry Pi Pico for a racing vehicle, integrating sensors, custom circuits, and an LCD for critical information. Easiest resume format changer - 129 users.

ACHIEVEMENTS

First Place, Talentmapp Hack4Hire Hackathon | 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. embeddings 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. Utilised multithreading for efficient communication between nodes

First Place, Aether Gamejam | Godot, GDScript, **Finalist,** NVIDIA Student Ambassador Program

First Place, WaffleHacks 2024 | Made chrome extension + AI backend | React.js, FastAPI, MongoDB, Gemini **June 2024**

CERTIFICATIONS, SKILLS & INTERESTS

- **Core Courses:** ML, Deep Learning, MPI, NLP, Graphics, Networks, Big Data, DSA
- **Certifications:** Gen AI with diffusion Models (NVIDIA), Fundamentals of Deep Learning (NVIDIA), Other certs on Linkedin.
- **Skills/Tools:** ML Modelling, Full-Stack, PyTorch, Keras OpenGL, AWS, Docker, PyTorch, Raspi, Linux, Git
- **Interests**: Music Production, Performing, Sound AI Research
- **Extra Curricular**: President at **Enigma**, the computer science club. 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, play guitar and sing.