Eswar Gupta | EE23B085
INDIAN INSTITUTE OF TECHNOLOGY MADRAS

EDUCATION & SCHOLASTIC ACHIEVEMENTS

Program	Institution	CGPA/%	Completion
BTech in Electrical Engineering	IIT Madras	**9.11/10**	2027
Class XII	Bhashyam ,Guntur	**97%**	2023
Class X	Bhashyam ,Rajamendry	**595 / 600**	2021

- Secured **AIR[1] 737 rank** in JEE[6] Mains out of **1.3 million applicants**, with an **EWS[2] rank of 66**
- Secured **AIR 2167 rank** in JEE[6] Advanced out of **1.9 lakh applicants**, with an **EWS rank of 213**
- Secured **AIR 757** rank in EAMCET out of 3.2 lakh applicants.
- Secured **1st place** among 100 schools at Mandal level and 5th at District level in **Chekumuki Talent Test.**
- Received Sankalp Award among 10,000+ students for raising ₹20K from 500+ villagers for 2018 Kerala floods.

RELEVANT COURSE WORK AND SKILLS

Andrew ng ML specialization	Applied Programming (In Python)	Probability	Signals and systems
Digital signal Processing	Functions of Several variables	Series and matrices	Control systems*
C,Python Programming	Data structures and Algorithms	Digital systems	Analog systems
Fundamentals to DL*	Microprocessor Theory and Lab	Solid state devices	Computer organization*

Languages and Libraries: C ,C++ ,Python , Verilog , AVR , ARM , Arduino , Numpy , pandas , Matplotlib , cython , NLTK , Flask
Frameworks and Tools: MATLAB , Jupyter Lab , Github , Notion , Latex , Vivado , Render , Microchip studio , Esay EDA

Internship

Medical image processing using AI

HTIC Intern
(June-July 2024)

Developed training data pipeline and trained YOLO model to foolproof a neurovascular instrument (Artsens).

- Converted SGL[3], LVM[4] files into **B-mode[5] ultrasound images** and annotated nerve locations for supervised training
- Engineered overlap feature to control image density per SGL to balancing efficiency and computational cost.
- Implemented **smart deadband filters** to suppress non-physiological artifacts (e.g., gel-contact noise) in raw signals.
- Employed YOLOv8 on images to detect biological structures, **leveraging wall motion polarity to distinguish blood vessels.**
- Processed ultrasound data from 300 patients, generating more than **2 million images for machine-learning training.**
- Conducted analysis with Python libraries to clean and augment data, ensuring robust, unbiased performance.

PROJECTS

Pattern Recognition and ML

- **CIFAR-10 Dataset:** Implemented ANN, CNN, and EfficientNet; compared performance in image classification. [GitHub]
- Analysed **heart disease dataset** to predict patient risk; goal was accurate binary classification using health parameters.
- Trained Regression, KNN, Random Forest and more; **Random Forest performed best with 95% accuracy** [GitHub]
- Implemented an **RNN**-based model for accurate SMS message **spam classification.**

News Perspective Generator Web App

- News Perspective Generator: **AI-powered web application deployed on Render** using Python integrated with **Gemini API**
- Scrapes user-provided article URLs with Flask & BeautifulSoup to extract relevant content, then lets users choose UPSC, Political, or Business lenses for detailed analysis via the Gemini API on Hugging Face. [Github] - [Website]

Applied programming lab
Professor :-Nitin Chandrachoodan

- Simulated a **circuit solver** to compute node voltages , branch current and power consumption from **.ckt** file.
- Developed Python programs to analyse keyboard usage , **generate heatmaps** and calculate finger travel distance
- Used **simulated annealing** algorithm to optimize keyboard layouts and visualize the results with a Matplotlib animation.
- Implemented **DAS acoustic imaging** to detect obstacles and assess impacts on microphone spacing and sampling rate

Microprocessor and Digital Systems Theory & Lab course projects

- Designed a 4-bit adder with output on 7-segment displays; implemented a 4-bit counter using a 555 timer.
- Developed AVR/ARM assembly projects: **interrupt-driven LED control**, flash-data analysis, and LPC2148 signal synthesis (triangular/square waves) via low-level hardware manipulation.
- I briefly studied **hardware-level execution of assembly instructions**, including DataPath and control unit fundamentals.

POSITIONS OF RESPONSIBILITY AND SOCIAL IMPACT

Electronics club *(Jun '23 – Mar'24)*

SONIC Project Member

SONIC is a **real-time noise filtering system** for crowded environments, adapting filter coefficients to ambient noise.

- Implemented and tested a **dual microphone based LMS algorithm** in MATLAB, then deployed on **STM32** with **embedded C**.
- Leveraged correlation between mic 2's noise-only signal and mic 1's noise component to filter noise and isolate speech.
- Implemented embedded C functions for WAV file encoding/decoding enabling end-to-end audio processing.

Coordinator

- Organized Summer School with **10,000+ online registrants** across 14 verticals, coordinating and teaching tech sessions.
- Interviewed 100+ candidates; co-managed 30-member Maker Fest team building a custom gaming console.
- Taught **200+ students** Arduino basics, programming, and physics-based projects in a 3-class offline workshop series.
- Guided students in **building a piano using Arduino**, resistors, foil, and fundamentals of physics and coding.

Student Mentor
Avanti Fellows
Sep 2023 – Sep 2024

Avanti Fellows is India's largest nonprofit providing free, high- impact STEM coaching to underserved students.

- Co-mentored **40 underprivileged students** as a part of an NGO that impacts **10k+ children** all over India
- Fostered a sub-group of 4 mentors, guiding mentees from JNV Pondicherry in their preparation for JEE 2025

Class Representative
Aug 2023 – May 2026

- Elected by the students of Electrical Engineering admitted in 2023, to represent our batch at various levels.
- Resolved slot clashes, managed holidays, and coordinated rescheduling by working closely with faculty and students.
- Acted as a bridge between students, HOD, and administration to address grading , and academic concerns.

* Upcoming course in the 5th semester |1: All india Rank|2: Economical weeker sections| 3: signal related files| 4: LabVIEW Measurement File |5: Brightness mode imaging | 6: Joint entrence exam |