SHRI PRATHAA MAGESH

Github
LinkedIn
Kaggle
Gmail

Education

B. Tech in Electrical Engineering, Minor in Computing 2026
Indian Institute of Technology Madras, Chennai (IIT M) *9.41/10*

XII 2022
Avila Convent MHS School, Coimbatore *595/600*

X 2018
Avila Convent MHS School, Coimbatore *482/500*

Scholastic Achievements

- Achieved All India Rank **620** in JEE Advanced conducted by IIT Bombay in the year 2022
- Secured All India Rank **508** in JEE Main 2022 and achieved a **100 percentile in Mathematics**
- Won National Talent Scholarship Exam scholarship (2019-2020) clearing NTSE Stage 2
- Achieved a Certificate of Merit for standing in the top 1% of the zone in **IOQM** 2020 (PRMO)
- Secured International ranking 19 in 2019-20 and Zonal ranking 2 in 2020-21 in SOF **IMO**
- Awarded the Venkitaraman Scholarship for Participation in competitions at the Pan IIT level

Competitions

- Won third place in **Convolve 3.0** (Pan India ML Hackathon organised by top 9 IITs with IDFC First Bank)
- Selected among the top 10 teams to participate in **India Terminal**' 24, tower defense-style programming competition held by Citadel
- Stood 20th in India and 126th at international level in **IMC Prosperity 3** Trading Competition with participation of 13,000+ teams
- Finalist at **Quantathon** (Shaastra, 2024); Participated in Akuna's 2024 **Virtual Quant Trading Challenge**
- Completed all five levels of the Google Foobar Coding Challenge successfully

Professional Experience

Quantitative Risk Analyst - Goldman Sachs May 2025 - July 2025
Model Risk Management Team, Risk Division *Python, Slang*

- Developed a custom implementation of Beta Regression to model Probability of Default (PD) using macro economic indicators
- Explored and benchmarked various MLE techniques for computational efficiency and numerical stability
- Conducted leave-one-out validation and rigorous assumption checks to ensure model reliability

Publications

- Implemented the Reconstruction of Brain microstructure using Differentiable Simulators for Diffusion MRI; Submitted a paper to ICML 2025; Prior paper accepted for poster presentation at ISMRM Diffusion Workshop [1]
- Implemented Gamma Ray Burst Light curve reconstruction using various DL models, accepted by AAS [2]

Extra-Curricular Activities

- Served as **Technical Assistant** (TA) for Computer Organization (EE 2003) undergraduate course
- Served as **Academic Buddy** of the EE department and helped juniors with academic and co-curriculars
- Served as **Press Correspondent** in T5E, the official student media body of IIT Madras and wrote various articles
- Member of **Electrical Engineering Research Club** that helps foster research interest among students
- Served as **Co-ordinator** at Tech & Innovation Fair in Shaastra 2024 that promotes Early stage Startups

Coursework

- **Mathematics, Statistics & Optimization:** Probability, Linear Algebra, Information Theory, Stochastic Modeling & Theory of Queues, Convex Optimization, Multi-Armed Bandits, Digital Signal Processing, Control Engineering
- **Computer Science & Systems:** Computer Organisation, Microprocessors, Digital Systems, Introduction to Programming, Applied Programming Lab
- **Algorithms & Economics:** Randomised Algorithms, Cryptography, Incentive-Centered Design (Game Theory), Quantum Algorithms & Complexity, Principles of Economics

  Performed literary review with report and presentation on topics like Monte Carlo Tree search, Adwords problem and its recent developments, Knapsack Auctions and Fast Mixing in Sparse Ising model

Skills

- **Math & Statistical Foundations:** Probability, Time Series, Stochastic Modeling, Information Theory, Signal Processing
- **Machine Learning & Modeling:** Model Optimization, Validation, and Deployment; ML/DL Model Design and Evaluation
- **Programming & Systems:** Algorithms & Data Structures, MySQL, Data Engineering (ETL Pipelines), MLOps (Kubernetes)

Projects

Noisy Channel Transmission

Prof. Nambi Seshadri, ECE, UCSD

- Designed an encoder–decoder JSCC framework that generates high-quality images from noisy channels, using semantic side-information like edge-maps/ DCT/ textual description to enhance perceptual quality. [3]
- Improved Randomized SNR training in [4], using Simulated annealing method with energy constrained via maximum Hamming distance on pairwise distances (Complexity tradeoff) to improve message transmission in noisy channels.

Bandits in Auction theory (Undergraduate Research Project)

Prof. Krishna Jagannathan, EE, IIT M

- Working on use of bandit theory for learning to bid in Repeated Auctions with Hidden Reserve Prices in different scenarios of first price and second price auctions, such as strategic seller, truthful seller case, reserve price drawn from a distribution etc.

Applied Programming Lab (Course Project)

Prof. Nitin Chandrachoodan, EE, IIT M

- Implemented SPICE simulation for DC circuit and Ultrasound image reconstruction using DAS algorithm
- Improved efficiency of traveling salesman problem by 70% using Simulated annealing
- Decreased runtime to 0.001 times naïve code and 0.1 times numpy using Cython optimization

Research Experience

Winter Intern, IIT Madras - Health Monitoring Devices

Dec 2023 - Aug 2024

Prof. R I Sujith | *Prof. Vishnu Unni* — *Arduino IDE, Python*

- Optimised the hardware prototype developed using **ESP-32** MCU, laying the groundwork for the Proof of Concept for the startup
- Applied various ML, Signal Processing, and Nonlinear Algorithms to detect anomalies of physiological time series data
- Implemented Classification of ECG signals (MIT-BIH database) using SMOTE and CNN and improved accuracy

AAS - American Astronomical Society | ICML - International Conference on Machine Learning | ISMRM - International Society for Magnetic Resonance in Medicine | JEE - Joint Entrance Examination | NTSE - National Talent Search Examination | IOQM -Indian Olympiad Qualifier in Mathematics | IMO - International Mathematics Olympiad | SOF - Science Olympiad Foundation | NAOJ - National Astronomical Observatory of Japan | UCSC - University of California Santa Cruz | UCSD - University of California San Diego