Naveen Prashanna Gurumurthy

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EDUCATION

The University of Texas at Dallas **Dallas, USA**
MS in Computer Sciences[1] | Intelligent Systems Aug 2023 - May 2025

Indian Institute of Technology Madras (IITM) **Chennai, India**
B.Tech + M.Tech in Mechanical Engineering | GPA: 7.44/10 Aug 2017 - May 2022
Minor in Artificial Intelligence and Machine Learning

Jawahar Higher Secondary School **Neyveli, India**
Class XII (CBSE) - All India Senior School Certificate Examination (AISSCE) | Score: 89.4% May 2017
Class X (CBSE) - All India Secondary School Examination (AISSE) | GPA: 10/10 May 2015

TECHNICAL SKILLS

Programming — C, C++, Python (Scikit Learn, Numpy, Pandas, Tensorflow), HTML, CSS, Bootstrap, Javascript, React, PostgreSQL

Software & Tools — ROS (Robot Operating Software), Arduino, MATLAB, Android Studio, Eagle, AutoCAD, LaTeX, MS Office

Certifications[2] — Design and Analysis of Algorithms, Android Development by Google, Trading Algorithms

PROFESSIONAL EXPERIENCE

Software Engineer, Quantitative Brokers (Full-time) **Jul 2022 - Jan 2023**
- Developed an integral internal tool for FIX order messages, enabling creation, parsing, and seamless transmission to the Trading Engine
- Enhanced the user experience through resolving bugs and augmenting functionalities for Multi-Leg Orders placement within the FIX tool

Software Engineer, Quantitative Brokers (Intern) **May 2021 - Jul 2021**
- Strengthened code quality by integrating SonarQube and BlackDuck scanners into Jenkins Pipeline, leading to a 20% reduction in critical issues
- Enhanced database efficiency with an ETL script, shifting from SQLite to Decentralized PostgreSQL, powering a VueJS Web-App development

Software Engineer, Big Data Science Research (Intern) **Apr 2020 - Jun 2020**
- Extracted Google Maps data via Selenium, replicated on OpenStreetMap using Folium, Convex Hull algorithm & Web Mercator Projection
- Devised a Map-matching algorithm to connect buildings to roads & Developed software for simulating traffic based on road, building density

Machine Learning Engineer, Alphabt– TVS Motors Ltd (Intern) **May 2019 - Jun 2019**
- Implemented a Python program to scan the label on vehicles using openCV module, boosting the performance of validation system by 3%
- Enhanced image processing accuracy by constructing a custom Object Detection model with TensorFlow to read engraved texts on vehicles

PROJECTS

Surface Texture Analysis (Master's Thesis, Dr. N. Arunachalam, IITM) **Aug 2021 - May 2022**
- Designed a systematic approach achieving 99.6% accuracy in identifying diverse machined surface textures using CV & ML techniques
- Constructed a Neural Network employing statistical features from GLCM for classifying machined surfaces, enhancing accuracy and efficiency

Analysis of Optimization Algorithms (Prof. Raghu Pasupathy, Purdue) **Mar 2022 - May 2022**
- Assessed the performance of various Stochastic Optimization algorithms on control agents created using OpenAI gym environment
- Developed and applied multiple Gradient Descent algorithms to optimize Deep Q-Network, achieving a 15% boost in agent's return

Cricket - Multi-agent Game (Prof. Chandrashekar Lakshminarayanan, IITM) **Feb 2022 - May 2022**
- Fabricated game as Markov Decision Process, utilizing Multi-Armed Bandit algorithms, resulting in optimized batting & bowling strategies
- Modeled winning strategies using a 2-player Monte Carlo Tree Search algorithm, elevating match outcomes through optimal action selection

Machine Learning Hackathon (Prof. Harish Guruprasad, IITM) **Nov 2020 - Jan 2021**
- Optimized bike tour recommendations through exhaustive data preprocessing, data binning, and feature engineering on biker's data
- Crafted an ensemble model (XGB, LGBM, CatBoost) with meticulous hyper-parameter tuning, yielding a commendable 0.71 accuracy

Loan Default Prediction (Prof. Nandan Sudarsanam, IITM) **Oct 2020 - Dec 2020**
- Developed loan default classifier using SMOTE and KNN Imputer for data pre-processing, achieving robust predictive accuracy
- Achieved F1 score of 0.95 by rigorously tuning hyperparameters in Random Forest Classifier, significantly enhancing learning outcomes

4-Bit Synchronous Up Counter (Dr. Somashekhar S. Hiremath, IITM) **Oct 2020 - Nov 2020**
- Constructed 4-bit synchronous counter with four JK Flip Flops, optimizing its functionality using K-Map equations
- Simulated counter in Tinkercad, validating circuit design and achieving error-free operation in a virtual environment

Ball Balancing Bot (Dr. Sathyan Subbaih, IITM) **Jan 2019 - Apr 2019**
- Engineered self-balancing ball bot with Arduino, Ultrasonic sensors and servo motor, achieving autonomous stability on grooved track
- Realized automated ball equilibrium by using closed-loop PID control system, showcasing consistent performance and accurate control

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1 - Ongoing   2 - Online Certified Courses

Self-Motivated Projects

Hangman Game   **Jan 2022 - Feb 2022**
- Designed an algorithm to play the game of Hangman where the player has to guess all the letters of a word, with a limited number of guesses
- Achieved 62.5% accuracy with Enhanced N-gram model, capturing letter patterns and improving predictive outcomes for word guessing

Bridge, Multiplayer Card Game   **Oct 2020 - Nov 2020**
- Developed a web application for the classic 4-player card game 'Bridge' with a chat room, using **React**, **Socket.IO** and **Node.Js**

DIC's Terrace Farming Robot, Inter-IIT TechMeet-2019   **Oct 2019 - Dec 2019**
- Designed an **Autonomous agricultural robot** that is capable of ploughing, seeding and harvesting by climbing up and down steps in hills
- Programmed the bot with Arduino to follow the wall by a **PID control system** (Proportional-Integral-Derivative) using ultrasonic sensors

Unmanned Ground Vehicle, IBot Club, IITM   **Jul 2019 - Nov 2019**
- Developed a program for **UGV bot** using **ROS** that transmits sensor & video feed to a remote system and tracked its path in the given map
- Programmed the bot to create a 3D map of surrounding using **kinect-360** and localize itself in the given map by **Monte Carlo Localization**

Water Levitation, Envisage, IITM   **Aug 2018 - Dec 2018**
- Developed a program to control frequency of strobe lights and water pumps for levitating the water using the principle of **Stroboscopic** effect
- Designed a **PCB** (Printed Circuit Board) using **Eagle** and fabricated the circuit along with Arduino to control pumps & lights to make patterns

Floor Cleaning Bot, CFI, IITM   **Sep 2017 - Oct 2017**
- Designed a model of remote controlled **Semi-Automatic Bot** using Arduino, Bluetooth module & qualified for **Asia & Limca Book of Records**

Scholastic Achievements

- Awarded a **Scholarship** for Graduate Studies for receiving merit score in Graduate Aptitude Test in Engineering **(GATE)** — **2021**
- Won **Silver prize** in DIC's Terrace Farming Robot for hilly areas challenge in **Inter IIT Tech Meet** among over 20+ teams — **2019**
- Qualified for **Asia and Limca Book of Records** for most number of robots cleaning an area (A Clean India Initiative) — **2017**
- Secured **All India Rank 793** (out of 150,000+ candidates) in Joint Entrance Examination Advanced **(JEE-Adv)** — **2017**
- Qualified among top **1%** in India for Final Level **National Mathematics Talent Contest** in class XI and XII — **2016**
- Awarded a Special Merit Certificate for Outstanding Performance in AISSE — **2015**
- Qualified Junior Level **National Mathematics Olympiad Contest** in class IX — **2014**

Coursework

- Introduction to Data Analytics
- Stochastic Optimization
- Multi-Armed Bandits
- Reinforcement Learning
- Multi-variate Data Analysis for Process Modeling
- Pattern Recognition and Machine Learning
- Algorithms Analysis and Data Structures[1]
- Discrete Structures[1]
- Series and Matrices
- Differential Equations
- Linear Algebra for Engineers

Leadership Experience

Teaching Assistant, IITM   **Aug 2021 - May 2022**
- Coordinated with the course Professor for effective teaching tactics and management in conducting classes and evaluation of the course grade
- Assisted a class of 50+ undergraduate students and aided in conducting class assignments, project and group meetings for better interaction

Web & Mobile Operations Coordinator, Mechanical Engineering Association, IITM   **Oct 2017 - Mar 2019**
- Collaborated to develop website & app for the department festival (Mechanica) for students to view and register for events, shows & lectures

Placement Coordinator, IITM   **May 2018 - Apr 2019**
- Organized placement tests & interviews for over 800+ students during the placement tenure and mentored students with placement procedure
- Reached out to 150+ companies for core profile to participate in the campus placement and handled 5 companies with their recruitment process

Envisage Coordinator, Centre for Innovation, IITM   **May 2018 - Jan 2019**
- Collaborated with the team that made a series of projects for a Techno-Entertainment show in Shaastra 2019, Techincal Fest of IITM
- Organized and presented the projects in an auditorium which witnessed a footfall of over 2500 students from various colleges

Events Coordinator, Mechanical Engineering Association, IITM   **Oct 2017 - Mar 2018**
- Ideated and organized a technical event (Manual Robotics) which witnessed huge footfall for the department festival (Mechanica)

Extra Curriculars

Sports	Won **Silver** medal for the mechanical team in the Inter Departmental Ultimate Frisbee League at IITM Participated in Badminton and Football tournaments for Inter Hostel League at IITM Successfully completed Run for Mann, a 5 km marathon as a part of Samanavay 2017
Activities	Trekking and Photography Enthusiast | National Cadet Corps conducted by 4(TN) Air squadron (Tech) at IIT Madras
Social Service	HelpAge India - Raised funds from residential areas for elderly people