RESUME - YEGNESWARAN R V - MS MECH ENGINEERING

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EDUCATION

Indian Institute of Technology Madras — **Chennai, India**
Btech in Mechanical Engineering ***GPA 8.57/10*** — *Nov 2021 to May 2025*

Chinmaya Vidyalaya Vaduthala — **Ernakulam, India**
CBSE Board Class XII, 98% — *2021*

Chinmaya Vidyalaya Vaduthala — **Ernakulam, India**
CBSE Board Class X, 96.4% — *2019*

RELEVANT COURSES

ME3201-Design of Machine Elements	AM5600-Computational Methods in Mechanics
AM5630-Computational Fluid Dynamics	ME2400-Measurements, Instrumentation and Control
ME3281-Machine Drawing Practice	ME5110-Inverse Methods in Heat Transfer
MA2040-Probability,statistics and stochastic Process	MS3510-Fundamentals of Operations Research

SCHOLASTIC ACHIEVEMENTS

- Secured **all India Rank 1772** ranking in the top **1.2%** among **1.6L** applicants in the JEE Advanced Examination held by IIT Kharagpur
- Placed in the top **0.6%** among **1.1 million** applicants in the JEE Mains Examination
- Awarded Certificate of Merit by the **CBSE** for ranking in the top **0.1** percentile of the Xth Board
- Awarded the **AT&T Global Network Scholarship** for Academic Excellence among UG Students for the year 23-24

PROFESSIONAL AND RESEARCH EXPERIENCE

Vedanta Aluminium Limited, Jharsuguda (Awarded Pre-Placement Offer) — **May-July 2024**

- Worked with the digitization and analytics team of the 2400 MW Captive Thermal Power Plant
- Optimized the running hours of 14+7(IA+SA) Compressors driving Pneumatic valves using Lean Six-Sigma
- Performed RCA of compressor leak points using regression and achieved an annual cost reduction of 1.4 Cr
- Analysed 20k+ data points of differential pressure of 48 Fabric Bag filters across 4 passes used to refine Fly ash from exhaust.
- Identified 10 Key performing compartments and implemented a neural network using tensorflow correlating the differential pressure, Coal input, Induced Draft Fan current and Gross Power Generation.

Team Anveshak(Mars Rover Team) — **Chennai,India**
Supervisor: Dr Asokan Thondiyath — *Sept 2022 to Present*

- Worked on the design and development of the robotic Manipulator and the soil sampling mechanism.
- Designed and implemented a worm gear system coupled to a 4 bar linkage mechanism to achieve gripping action from the 3 Degree of Freedom end effector(2 finger parallel and encompassing grip).
- Performed FEA using ANSYS and FUSION 360 to optimize the support skeleton comprising of Nylon and 3-D printed PLA
- Achieved higher gripping efficiency(max load of 9Kg) and ease of maintenance while maintaining a weight limit of 2Kg.
- Designed and prototyped the Elbow of the 5 DOF Manipulator and it's integration with the end-effector enabling a 150 degree pitch and the soil collection equipment driven using Auger Drill
- Prepared a Design report of the individual systems and presented in the International Rover Design Challenge 2022.

Surgical Robotics at INSPIRE Lab, IIT Madras — **Chennai,India**
Supervisor: Dr Nirav Patel — *June 2023 to Present*

- Working on the design and prototyping of a 3d printed 2 DOF robotic needle driver assembly to perform Liver biopsy.
- Designed the mechanism incorporating Lead screw for the linear actuation and direct servo drive for the pitch motion of the driver about the arm. Achieved a range of 100mm linear movement and 112 mm for needle insertion below the skin.

Vornoi Generation of Spheres without Bisector Computation — **Jan 2024 - Present**
Supervisor: Dr Ramanathan M

- Co-developing an Algorithm to identify Vornoi vertices of a set of Spheres and to determine surface and edge topology
- Implementing algorithms using C++ and visualization of edge and surface topology using CGAL

PROJECTS

Semi-Automatic Rain Cover for Wheel-Chairs — **July 2022 - Nov 2022**
Supervisor: Dr Sujatha Sreenivasan

- Designed and prototyped a semi-automatic Rain cover for wheel chair users operated using a lever above the wheel
- A parallel 4 Bar mechanism coupled with gears was implemented for a 120-degree arc of the extending rain cover
- Simulated the motion in MATLAB to optimize for link lengths, gear parameters and rain cover dimension and material

Convex Hull Generation with Deep Learning **July 2024 - Dec 2024**

Supervisor:Dr Ramanathan M

- Implemented a Point-Net Model comprising of an LSTM based encoder-attention-decoder to generate 2D Convex Hull
- The architecture involves a 2-layer NN classifying the hull points from a 2-D set based on linear separability of points
- The Point-Net was used to predict the sequence of points in the Hull dynamically with input points varying between 5-40
- Achieved an accuracy of 95% in Point prediction and 91% in sequence generation evaluated using the enclosed area

Study on Inverse Problems in Heat Transfer **Feb 2024 - Apr 2024**

Supervisor:Dr C Balaji

- Implemented a Bayesian Algorithm with Metropolis Hastings and Markov Chain/Monte Carlo Sampling of heat transfer rate in an Adiabatic fin in Python
- Implementation of GNA,LMA and Tikhonov Regualrization while solving for Heat transfer rate/ coeffcients in heat transfer problems involving non linear Temperature Distribution in python.
- Analyzed Iterations for convergence as against sampling parameters and experimentally evaluated the ideal initial guess and MAP(Maximum-A-Posteriori)

POSITIONS OF RESPONSIBILITY

Digital Infrastructure Head, Placement and Internship Cell, IIT Madras **May 2024 - Present**

- Responsible for the development and management of the Placement & Internship Portal forstudents and recruiters
- Automated Notificationsregarding Company Application/Test Updatesto individual departments using Slack API thereby cutting on down time and eliminating errors caused from manual message forwarding to each department
- Developed an Interview Management System using Google Sheets API to efficiently track and schedule interviews
- Analyzed correlations between CGPA, application count, number ofshortlists and number of offers to introduce the Credit system for Placements directing the students to apply for companies by expending a fixed number of credits.

Department Head, Placement and Internship Cell, IIT Madras **May 2024 - Present**

- Spearheaded a 3-tier team of 12, overseeing placements, internships and corporate relations for 200+ students
- Addressed key meets with Board of Placements, Advisors & Corporate Partners enhancing placement activities
- Secured the largest number of Day 1 internship offers with a 45% YoY increase and a 25% YoY increase in recruiters.
- Secured the largest number of Day 1 Placement Offers and the highest percentage of students placed across Universities in India with a 15% YoY increase in offers and 30% YoY increase in recruiters

Co-ordinator, Placement and Internship Cell, IIT Madras **May 2023 - May 2024**

- Facilitated the Placement & Internship Season (2023-24) providing comprehensive support for over 11 MNCs
- Managed the recruitment processes and interviews of top firms during Day 1 including Microsoft, Procter & Gamble and Bajaj

TECHNICAL SKILLS

- **Softwares and tools:** ANSYS, FUSION 360, SOLIDWORKS, CREO, MATLAB/SIMULINK, ARDUINO, AWS, Azure
- **Programming:** Python, C/C++

COMPETITIONS

- Runners Up among **40+** Teams in the International Rover Challenge, **India**
- Placed among the top **35** teams in world among **120+** competitors in the University Rover Challenge held in Utah,**USA**
- Placed **6th** out of **40** International teams in Anatolian Rover Challenge held in **Istanbul**, **Turkey**
- Placed **9th** in the International Rover design Challenge held by Mars Society **South Asia**