

# RESUME - YEGNESWARAN R V - MS MECH ENGINEERING

yegneswarrv@gmail.com

<https://github.com/yegi18>

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## EDUCATION

**Indian Institute of Technology Madras**  
Btech in Mechanical Engineering GPA 8.57/10

Chennai, India

Nov 2021 to May 2025

**Chinmaya Vidyalaya Vaduthala**  
CBSE Board Class XII, 98%

Ernakulam, India

2021

**Chinmaya Vidyalaya Vaduthala**  
CBSE Board Class X, 96.4%

Ernakulam, India

2019

## RELEVANT COURSES

ME3201-Design of Machine Elements  
AM5630-Computational Fluid Dynamics  
ME3281-Machine Drawing Practice  
MA2040-Probability, statistics and stochastic Process

AM5600-Computational Methods in Mechanics  
ME2400-Measurements, Instrumentation and Control  
ME5110-Inverse Methods in Heat Transfer  
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 the voronoi 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.
- Implementation of GNA, LMA and Tikhonov Regularization while solving for Heat transfer rate/ coefficients in non linear Temperature Distribution Problems
- Analyzed the convergence of solution 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 for students and recruiters
- Automated Notifications regarding Company Application/Test Updates to 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 of shortlists 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 highest number of Day 1 internship offers with a 45% YoY increase and a 25% YoY increase in recruiters.
- Secured the highest 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**