

# Vedant Anand

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## EDUCATION

SRM University, Chennai, India

Jun 2024

*Bachelors in Mechatronics Engineering with specialization in Robotics*

CGPA: 8.75

- **Patent (Application no. 202441029892):** Design of Autonomous Underwater Vehicle (AUV) April 2024- ongoing
- **Relevant coursework:** Machine Design, Kinematics and Design of Rigid Mechanisms, Electrical Machines and Actuators, Robotics, Fluid Power Systems and Automation, Sensors and Signal Conditioning, System Dynamics, Manufacturing Processes, Design of Mechatronics Systems

## TECHNICAL SKILLS & CERTIFICATIONS

**Programming Languages:** MATLAB, Embedded C, Python, C, HTML, CSS

**Computer:** SolidWorks, Fusion360, AutoCAD, CATIA, FluidSim, Arduino IDE, ANSYS, Excel, Word, PowerPoint

**Laboratory Skills:** 3D printing, Angle Grinding, Drill Pressing, CNC Milling Operation, Lathe Operation

**Engineering Skills:** CAD Drawing, 3D Design of Mechanisms, Material Selection and Fabrication, Embedded programming

**Certifications:** Certified SolidWorks Associate (CSWA)

## EXPERIENCE

SRM University, Chennai, India

Mar 2023 – Jun 2024

*Mechanical Fabrication and Design Lead, SRM Autonomous Underwater Vehicle (SRMAUV) Team*

*Responsible for: Mechanical Design and Fabrication of Underwater Vehicle*

- Engineered compartments for electronic units, reducing space consumption through establishment of stack design layers
- Implemented cylindrical chassis hull designs with extruded channel frame for shock absorption
- Designed and Fabricated the hull cap for waterproof seal, implementing Double O-Ring facial seal.

Zamil Steel, Pune, India

Dec 2022

*Production and Quality Trainee*

*Zamil Steel devised a training/ internship program for engineering students to gain an Industrial Exposure.*

- Gained exposure to various types of machines in the assembly line such as, Shearing machines, Milling machines, Welding machines, Painting machine and Oven for steel metals blocks.
- Site visit at Pirangut (construction of Godrej's office), where Pre-Engineered Blocks (PEBs) were transported and assembled.
- Devised a design recommendation of a computer vision system for Quality Check to be included in the assembly line, to eliminate the potential human based errors during quality control.

SRM University, Chennai, India

Sep 2020 - Apr 2022

*Mechanical Fabrication and Design Member, Rudra-SRM Mars Rover*

*Responsible for: Drive System, Robotic Arm*

- Improved Degree of Freedom of arm for fixed payload by replacing linear actuators and implementing rotational actuators.
- Modeled Robust End-effector's yaw-pitch-roll design with Bevel Gears for better stress tolerance and precision in movement.
- Designed hybrid drive system for lower power consumption using 4 wheel drive mode and improved flexibility using tripod gait.

## PROJECTS

SRM University, Chennai, India

**Vehicle Advancement Technology for Knowledge in Hydrodynamics and Development (VATKHD)**

Aug 2023 – Jun 2024

- Designed comprehensive AUV design to examine the behavior under various variable underwater environments.
- Based on CAD design and analysis, the fabrication of the underwater vehicle weighing less than 25 kilograms was achieved, with battery capacity capable of operating for approximately an hour.

**Implementation of Denavit-Hartenberg (DH) Parameters on RR Manipulator using IOT via NodeMCU ESP32**

Nov 2022

- Implemented and verified DH parameters on robotic arm of RR configuration via servo feedback response mechanism with attached mechanical end effector using ESP32 NodeMCU micro-controller code for IoT control using Blynk.

**Compact Extraterrestrial Navigation Technology for Autonomous Underground Reconnaissance**

Jun 2021- Sep 2021

- Analyzed and configured unique interchangeable drive design using SolidWorks to ensure seamless wheel transitioning for navigating Martian surfaces with optimized flexibility and effective data transmission.
- Designed rover system using auger mechanism for collecting Martian surface samples to conduct in-situ biological and elemental analysis via onboard OrganiCam and Electron Beam generator to test signs of microbial life, habitability, and traits.
- Devised gripper mechanism for potential retrieval of regolith Martian structures for geological and ex-situ analysis.

**Implementing Vehicle Design of Snow Clearing Automobile for High Altitude Areas**

Spring 2021

- Initialized a proof of concept of vehicle design to address DRDO problem statement, for snow removal in High Altitude Areas.
- Created a 3D Design of Snow clearing automobile including a scooper and impeller-based mechanism at the front to combat snow accumulation.
- Designed attachable separate sprinkling mechanism for uniform distribution of eco-friendly chemical compounds, to potentially result in slowed snow formation and improved clearing process in high-altitude environments

**Human Assisting Mobile Robot with Integrated Produce Chopping Mechanism**

Feb 2021- Mar 2021

- Formulated Rover Design with "Chopping mechanism" based on learnings from the motion analysis of linear actuator control and servo feedback, this was helpful in blade selection, resulting in reduced human involvement.

**Geyser Hot Spring Traversal Rover**

Dec 2020 - Jan 2021

- Engineered Rover to withstand temperatures up to 302°F by using epoxy-based structural insulation for protection while navigating through challenging hot geyser spring terrains
- Devised an Auger mechanism to procure samples of below-surface areas, and a transferring mechanism for collection of the samples inside the chassis.

## VOLUNTEERING

**SRM University, Chennai, India****TEDxSRMIST, Organizing Committee (Curations and Operations)**

Aug 2022 – Jun 2024

Aided in operations and logistics by managing cross-functional teams for execution of the annual university-wide TEDx event.

- Defined speaker acquisition and speech structuring using TEDx guidelines to facilitate better experience for the audience.
- Evaluated and selected speakers from a pool of 100+ applications based on creative submissions and eloquence to ensure content quality and diversity for the event.

**Smart India Hackathon (Hardware): Grand Finale - National Level Event, Emceeing Volunteer**

Aug 2022

- Managed event timeline and served as communicator for organizers to keep 150+ students informed of upcoming events
- Emceed to the SIH finalists and Interviewed Chief Guests from Shell India.

## ACHIEVEMENTS

- Special Award for "Tenacity", TAC Challenge 2024 (International Subsea Drones Competition) Jun 2024
- "Best Multidisciplinary Project of University" – Runners Up, SRM University May 2024
- National Level Hackathon, NEXUS – Second Runners Up, Coimbatore Institute of Technology Mar 2024
- Introduction to Internet of Things (IoT) - Top 5%, Silver category, NPTEL, IIT Kharagpur Oct 2022
- Defense Service Hackathon (Hardware) - 2nd (Silver) Mar 2021
- International Rover Design Challenge - Innovation Award for Drive System, Space Robotics Society Jun 2021- Sep 2021

## ACTIVITIES & INTERESTS

**Robotics and Automation, IEEE Society Member**

Feb 2023 - Present

**Interests:** Chess | Motorsports | Tennis | Trekking