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
- ***Relevant coursework:*** *Probability and Statistics, Robotics, Linear and Digital Control Systems, Fluid Power Systems and Automation, Artificial Intelligence in Robotics and Computer Vision, System Dynamics, Machine Design*

TECHNICAL SKILLS & CERTIFICATIONS

Programming Languages: MATLAB, Microcontrollers, 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: Control Systems, Microprocessors, Computer Vision System, Mechanical Analysis

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: System design, Fabrication, Mechanical stress reduction and System space efficiency / modularity for AUV

- Engineered compartments for electronic units, reducing space consumption by 50% through establishment of stack design layers
- Implemented cylindrical chassis hull designs for uniform distribution of buoyant force, resulting in 35% stress reduction
- Designed modular mechanism of hull compartments through customized stud-rods via SolidWorks resulting in 50% time saved in retrieval and debugging of individual compartments during testing

Zamil Steel, Pune, India Dec 2022

Production and Quality Intern

Brought on to engineer the workflow sequence of the assembly line in the production and quality capacity of steel metal pieces

- Recommended better Quality control measures via designed Computer Vision System, potentially eliminating human-based errors and improving process efficiency by 300%
- Designed and developed an ideation phase of Master PLC controller system to directly control the subunits of each PLC system individually resulting in 60% improved process time

SRM University, Chennai, India Sep 2020 - Apr 2022

Mechanical Fabrication and Design Member, Rudra-SRM Mars Rover

Responsible for: Improving Drive Systems, Designing robotic arms, Motion analysis, CAD rendering, Material Selection, Fabrication

- Optimized arm motion control for fixed payload resulting in improved maneuverability to additional Two Degrees of Freedom
- Modeled Robust End-effector's yaw-pitch-roll design via SolidWorks with Bevel Gears for improved stress tolerance by 75% and applied Force-Stress Analysis on Rover chassis design
- Designed hybrid drive system for 150% lower power consumption and three-fold improved flexibility on variable Martian terrains

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 dynamic behavior under various variable underwater environments using Computational Fluid Dynamics, Stress-strain and motion analysis to develop improved underwater guidance and control system
- 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 on electronic interfaces

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

- Drafted specialized vehicle design to address challenges posed by snow removal in High Altitude Areas using Fusion360 and conducted mechanical system analysis to include scooping and impeller-based mechanism to combat snow accumulation
- Designed attachable separate sprinkling mechanism using SolidWorks 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 motion analysis of linear actuator control and servo feedback for blade selection using SolidWorks, resulting in reduced human monitoring by 80% and improved ease of produce chopping

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 improved navigation through challenging hot geyser spring terrains
- Devised an Auger mechanism to procure samples of below-surface areas using graphed ANSYS structural stress-strain simulation leading to factor of safety equal to six and enhanced critical insights into system structural integrity

VOLUNTEERING

SRM University, Chennai, India

TEDxSRMIST, Organizing Committee (Curations and Operations) Aug 2022 – Jun 2024

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

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

Smart India Hackathon (Hardware): Grand Finale - National Level Event, Emceeing Volunteer Aug 2022

- Managed event timeline and served as liaison for organizers to keep audience of 150+ members informed of upcoming events
- Emceed over 100+ National finalists and Interviewed Chief Guests from Fortune500 companies

ACHIEVEMENTS

- Special Award for "Tenacity", TAC Challenge 2024 (International Underwater Robotics Competition) Jun 2024
- "Best Multidisciplinary Project of University" – Runners Up, SRM University May 2024
- National Level Hackathon, NEXUS – Second Runners Up Mar 2024
- Introduction to Internet of Things (IoT) - Top 5%, Silver category, NPTEL Spring 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 | Music | Tennis | Trekking | Active Blood Donor