NISHANTH RAJKUMAR

MAIL | LINKEDIN | PORTFOLIO | TEAM WEBSITE

OBJECTIVE

I am a highly passionate and enthusiastic individual with insightful research exposure and hands-on experience that has intrigued me into pursuing M.eng Mechanical Engineering to explore multidisciplinary research options and contribute to community development to the best of my abilities.

EDUCATION

Vellore Institute Of Technology - Chennai, India — Jul'18 – Apr'22 (expected)
Under graduation – CGPA 8.4/10
Mechanical Engineer- School of Mechanical Engineering (SMEC)
(Primary focus on Designing and Simulation, Mechatronics and Artificial Intelligence)

Maharishi International Residential School — Jun'04 – March'18
School – Central Board Of Secondary Education
Computer Science, Physics, Maths, Chemistry

CORE SKILLS

SOFTWARE: Catia, Solidworks, Adams, Fusion 360, Hypermesh, Ansys, Matlab and Simulink
PROGRAMMING: Python, C, C++
HARDWARE: CNC's – VMC, Lathe; PLC's and SCADA; 3D - Printers

PROFESSIONAL EXPERIENCE

COMBAT VEHICLES R&D ESTABLISHMENT, DRDO, MINISTRY OF DEFENSE — Nov'21 – Apr'22
Project Intern - **Supervised by Dr. Davidson Jebaseelan**, Professor, VIT and **Dr. Babu, Sc "F"**, CVRDE

- Working on project titled "Design and Simulation of a Robotic Arm for Safe Retrieval of Ammunition from a Jammed Machine Gun".
- Designed a mechanical and a mathematical model for a robotic arm that follows a set of sequential operations with Solid works and Matlab and Validated the entire model with MSc Adams.

UNIVERSITY OF ALBERTA – CANADA — July'21 – Sep'21
Research Intern – **Supervised by Dr. Kim Adams, Director of AT Lab**, UAlberta

- Project Titled – "Brain Controlled Robot for Disabled Children to enhance their neural activity"
- Applied Python programming and understanding of control systems and mathematical models of physical systems to contribute to student trials on children and patients with special abilities specifically related to neurology

PROFESSIONAL INSPECTION CONSULTANCY, ASME AUTHORIZED, INDIA — Apr'21 – Jun'21
Summer Research Intern – **Supervised by Dr. Davidson Jebaseelan**, Professor, VIT

- Utilized Finite element analysis as per ASME section VIII Div. Part 5 (Numerical analysis) on the pressure vessel for plastic collapse (Plastic Elastic Analysis).
- Performed FE analysis for API 653 above-ground storage tank and analyzed the impact of wind and seismic activity.

HI-TECH INDUSTRIES CHENNAI, INDIA — Jun'20 – Jul'20
Industrial Intern

- Undergone a technical internship on various machining processes using different milling center's and also gained detailed knowledge of designing and analysis using CATIA and ANSYS.
- Gained a deep knowledge on analyzing different structures being manufactured.

PRECIMECH COMPONENTS AND COMPANY CHENNAI, INDIA Aug'19 - Feb'20

Industrial Intern

- Different parts of a stair-climbing robot were designed, engineered, manufactured and assembled with its required electronic sensors.
- Several AI optimizations were done in order to remove unnecessary weights across the whole frame and had obtained the strongest frame among all other interns.

PROFESSIONAL PROJECTS

Stress Linearization of a Pressure Vessel and CFD Study Due To External Wind Conditions

- A pressure vessel with different nozzles and flanges were designed according to their NPS (North American set of standard sizes for pipes).
- The pressure vessel was designed with a fixed and a sliding saddle. Different bending moments on the inside and outside of the supports were analyzed that occurs due to the internal pressure and wind pressure with a speed of (45 m/s).

Design and Analysis of Single Clutch Plate

- Different parts of single clutch plate such as pilot bearing, clutch plate, pressure plate clutch shaft and helical springs were designed and assembled.
- This assembly was analyzed with different stresses a better material was chosen in order to decrease the stresses across the clutch plate.

Computational Fluid Dynamic Study of Omega VTOL UAV – Atom Robotics

- An autonomous aerial planetary system designed for logistics and reconnaissance missions in the Mars environment by my team.
- Completely designed and tested from scratch considering the compatibility for flight in a Martian environment.
- A CFD study was done in order to find the critical or stalling angle of attack with the structural study to check the maximum stresses across different regions of the frame.

Ablution Assist for Elderly and Disabled

- Designed an advanced manual Rollator for elderly and disabled people, equipped with Arm Rests and Cutouts, which will help them in their morning ablutions.
- The rollator can be pushed on to a lavatory and the water supply can be connected through a hose in the given slot under the seat.
- Nozzles are added according to a nozzle pipe size grades in order to supply a low-pressure water flow to high pressure flow.

Other personal and academic projects can be seen in portfolio (projects)

RESEARCH EXPERIENCE

The Research Details are given in my portfolio **(research).**

1. **Generative Design Optimization and Analysis of Connecting Rod for Weight Reduction and performance enhancement**, R Nishanth et al 2021 J. Phys.: Conf. Ser. 1969 012022
2. **Numerical Analysis of above ground storage tanks with different settlement conditions**, Elsevier Journal Of Pressure Vessels And Piping, R Nishanth et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 850 012019
3. **Computational Study Of Fire Water Storage Tanks Due To Seismic Loading,** SESBT 2021 International Conference, IOP conference proceedings: journal of physics – Under Review
4. **Fault Diagnosis of an All Terrain Vehicle Gearbox System using Statistical Features and Advanced Classifier Methods,** Elsevier Journal of the International Measurement Confederation – Under Review
5. **A Performance Characteristics Review Of Mahua Bio diesel In Ci Engines,** Prime 2021 International Conference On Progressive Research In Industrial & Mechanical Engineering - Accepted
6. **Fault Diagnosis of Friction Stir Welding Process using Statistical Features and Advanced Classifier Methods -** Ongoing

ACCOLADES AND RECOGNITION

1. **Founder and Team-Lead | Atom Robotics | VIT, Chennai** Jan'19 - Present
   - Enthusiastic University chapter on intelligent robotics and satellite exploration focusing on intelligent ground vehicle targeting IGVC, USA, planetary ariel systems, etc. (Team Website)
2. **Mitacs Globalink Graduate Fund (15000 CAD)** for pursuing Master's programs in Canada by virtue of having done an internship at the University of Alberta, Edmonton.
3. **Certified SOLIDWORKS Professional** in Mechanical Design, Dassault Systèmes
4. **Certified SOLIDWORKS Associate and Additive Manufacturing Associate,** Dassault Systèmes
5. An industrial project had been offered by the Indian Oil Corporation through their Tie-Up company titled as Study on the deformation (with and without plumbs) of Vertical Storage Tanks with 50-100 tilt due to sloshing under the Action of Near-Fault Earthquakes.
6. Placed as the **73rd team all over India** in the event Flipkart Grid 2.0 Round-1
7. Placed **1st in the event "Autonomous Line Follower"**, in Currents'20 - NIT Trichy
8. Placed **1st in "Robozest", in Kurukshetra'20** - College of engineering, Anna University
9. Further achievements with certificates can be seen here.

EXTRA CURRICULAR

President of ATOM Robotics, VIT Chennai
- An official team of VIT Chennai which conducts workshops, events and symposiums.

Member of National Service Scheme
- A public service program directed by the Government of India.
- As part of NSS, I, as a team had participated in and coordinated several social service activities benefitting various sections of the society and the environment.

Member of IEEE Robotics and Automation Society
- An active group coordinating member of IEEE-RAS.

Core Committee of team Vibrance'20
- Worked as part of a team in-charge of Hospitality Management.

ACKNOWLEDGEMENT

I, hereby affirm that the aforementioned statistics is true to my knowledge, as of September 15th, 2021. References are available on request.