# Nishanth Rajkumar

|+91-7338929490 | nishanthrajkumarofficial@gmail.com | LinkedIn | Portfolio | Twitter |Team Website|

## OBJECTIVE

I believe that the fruitful past academic, research, and hands-on experiences I have had, the present grooming I am going through, and a focused, determined and passionate approach towards the future are the main ingredients for success in my long-term goals. I aim to work on research-oriented organizations that utilize and help in honing my skills.

## EDUCATION

**VELLORE INSTITUTE OF TECHNOLOGY - CHENNAI, INDIA** Jul'18 – April'22 (expected)

UNDERGRADUATION – CGPA 8.36/10
Mechanical Engineer- School of Mechanical Engineering (SMEC)
**(Primary focus on Designing and Simulation, Mechatronics and Artificial Intelligence)**

**MAHARISHI INTERNATIONAL RESIDENTIAL SCHOOL** June 2004 - March 2018

SCHOOL
Computer Science- CBSE
**Computer Science, Physics, Maths, Chemistry**

## PROFESSIONAL EXPERIENCE

**UNIVERSITY OF ALBERTA – CANADA** Starts by July'2021

**Research Intern**

- Familiarity with C/C++ programming, knowledge of control systems, familiarity with mathematical models of physical systems, hands-on skills for a health student conducting trials: Experience working with children and special patients, background knowledge in neuroscience and/or children's development.
- Supervised by Prof. Kim Adams director of Assistive Technology Lab, University of Alberta.

**PROFESSIONAL INSPECTION CONSULTANCY, ASME AUTHORIZED, INDIA** May'21 – Present

**Summer Research Intern**

- Good hands on work experience and involves in Finite Element Analysis (FEA) as per ASME section VIII Div. Part 5 (Numerical analysis) of pressure vessel for Plastic collapse (Plastic Elastic analysis) and FE analysis for API 653 above ground storage tank including wind and seismic analysis.
- Supervised by Dr.Davidson Jebaseelan, Associate Professor of VIT University.
- Few publications have been done with the company's guidance

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

**Research-Cum-Project Intern**

- Various parts for an unmanned ground-vehicle are designed, engineered, manufactured and assembled with its required electronic sensors for agricultural uses.
- Different types of optimizations were done in order to remove unnecessary weights across the whole frame.
- Awarded as the best design engineer among all the other interns.

**HI-TECH INDUSTRIES CHENNAI, INDIA** Jun'20 - Jul'20

**Industrial Intern**

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

**ATOM ROBOTICS CHENNAI, INDIA** Jan'19 - Present

**Co-Founder and Team Lead**

- An Intelligent Robotics and Satellite exploration team consisting of 50+ aspiring young minds.
- The team focuses on intelligent ground vehicles targeting IGVC, USA; Planetary Aerial System using VTOLS targeting IPAS, Mars society South Asia (MSSA); Satellites targeting Can-Sat, USA.
- Won more than 20 awards to date, can be seen in Team Website and Team Report.

## RESEARCH EXPERIENCE

### The Research Details are given in my portfolio.

1. **Generative Design Optimization and Analysis of Connecting Rod for Weight Reduction and performance enhancement**, iop conference proceedings: journal of physics – under review
2. **Numerical Analysis of above ground storage tanks with different settlement conditions**, Elsevier Journal Of Pressure Vessels And Piping - under review
3. **Computational Study Of Fire Water Storage Tanks Due To Seismic Loading,** Sesbt 2021 International Conference, iop conference proceedings: journal of physics – accepted
4. **A Performance Characteristics Review Of Mahua Biodiesel In Ci Engines,** Prime 2021 International Conference On Progressive Research In Industrial & Mechanical Engineering - accepted
5. **Numerical Analysis Of Composite Planetary Gear Set,** Elsevier Journal Of Computational Materials Science - ongoing

## RESEARCH PROJECT UNDER MENTORSHIP

**Supervisor:** Prof. Davidson Jebaseelan, Professor, School of mechanical engineering, VIT chennai

**The project offered by Indian Oil Corporation**: A Study on the deformation (with and without plumbs) of Vertical Storage Tanks with $5^0$-$10^0$ tilt due to sloshing under the Action of Near-Fault Earthquakes

## AREA OF EXPERTISE

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|---|---|
| **Design and Simulation** | Fusion360, SolidWorks, Catia, Ansys |
| **Programming** | C, C++, Python, Matlab and Simulink |
| **Machine Learning** | OpenCV, TensorFlow |
| **Hardware** | Arduino, Raspberry Pi, Drones, ESP, CNC |
| **Linguistic knowledge** | **Fluent**: English; **Intermediate**: German, Hindi; **Native**: Tamil |
| **Soft Skills** | Leadership, multi-tasking, Decision making |

## ACCOLADES AND RECOGNITION

**4th Runner up of ATMOS'19**: BITS Pilani, Law follower, Tech-Management Fest
**Winner of Currents'20-NIT Trichy**: Placed 1st in the event "Autonomous Line Follower".
**Winner of Kurukshetra'20-College of engineering, Anna University**: Placed 1st in "Robozest".
**Placed in top 100 teams in the event Flipkart Grid 2.0**: Placed as the 73rd team all over India in Round 1.
**Best Concept Prize** by Precimech Components and co.: Received a special award for designing the best fixture.
**Further achievements with certificates can be seen here.**

## 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 ArmRests 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.

## 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 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, **Nishanth Rajkumar**, hereby affirm that the aforementioned statistics is true to my knowledge, as of Mar 29th, 2021. References are available on request.