# Nishanth Rajkumar

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Portfolio
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## Education

- **Concordia University** — Canada
  *Master of Engineering - Industrial Control Systems* — *July 2018 - June 2022*
- **Vellore Institute of Technology** — India
  *Bachelor of Technology - Mechanical Engineering; GPA: 8.59/10* — *July 2018 - June 2022*

## Patents and Publications

- **Robotic Arm System for Retrieval of Ammunition from Machine Gun**: IPO, Office of the controller general of patents designs and trademarks (Pending)
- **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
- **Numerical Analysis of above ground storage tanks with different settlement conditions**: R Nishanth et al 2021 IOP Conf. Ser.: Earth Environ. Sci. 850 012019
- **Development and Testing of a Method Intended for Children with Disabilities to Control a Semi-Autonmous Drone**: Under Review
- **Fault Diagnosis of an All Terrain Vehicle Gearbox System using Statistical Features and Advanced Classifier Methods**: Under Review

## Research and Industrial Experience

- **Combat Vehicles Research and Development Establishment, DRDO** — India
  *Research Intern in the field of Mechatronics* — *Nov'22 - Apr'22*
  - Designed a mechanical and a mathematical model for a Robotic Arm that follows a set of sequential operations to retrieve a Jammed Ammunition from a Machine Gun
- **MITACS - University of Alberta** — Alberta, Canada
  *Research Intern in the field of Robotics and Rehabilitation* — *Jul'21 - Sep'21*
  - Implemented a drone technology using specialized mathematical models to aid in the rehabilitation of patients with special abilities
- **Professional Inspection Consultancy, ASME Authorized** — India
  *Research Intern in the field of Computational Mechanics* — *Apr'21 - Jun'21*
  - Performed FE analysis for API 653 above-ground storage tank and analyzed the impact of wind and seismic activity
- **HI-Tech Industries** — India
  *Industrial Intern in the field of Machining Processes* — *Jun'20 – Jul'20*
  - Undergone a technical internship on various machining processes using different milling center's and also gained detailed knowledge of designing and analysis.
- **Precimech Components and Company** — India
  *Industrial Intern in the field of Design, Materials and Manufacturing* — *Aug'19 - Feb'20*
  - Different parts of a stair-climbing robot were designed, engineered, manufactured and assembled with its required electronic sensors.
- **Atom Robotics** — India
  *Co-Founder and Team Leader* — *Oct 18' - Feb'22*
  - Team Website: ATOM Robotics
  - An official team of VIT Chennai which conducts workshops, events and symposiums and an Enthusiastic University chapter on intelligent robotics and satellite exploration focusing on intelligent ground vehicle targeting IGVC, USA, planetary Ariel systems

## Skills Summary

- **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

## Projects

- **Design and Simulation of a Robotic Arm for Safe Retrieval of Ammunition from a Jammed Machine Gun**: Designed a mechanical, a mathematical model for a robotic arm that follows a set of sequential operations and validated the Kinematics and Dynamic Properties of the Model
- **Stress Linearization of a Pressure Vessel and CFD Study Due To External Wind Conditions**: Analysis was done on the stress variation across the thickness of the wall close to the nozzles and supports. To avoid unnecessary complexities, various solutions were offered for the setup
- **Design and Optimization of Single Clutch Plate Mechanism**: Design with Material optimizations were done in order to reduce the wear and tear of a Single Clutch Plate Mechanism
- **Ablution Assist for Elderly and Differently-abled**: Designed and manufactured an advanced manual Rollator for elderly and people with disabilities, equipped with Arm Rests and Cutouts, which will help them in their morning ablutions
- **Computational Fluid Dynamic Study of Omega VTOL UAV Atom Robotics**: 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

## Honors and Awards

- Concordia Special Entrance Award Holder of 6000 CADs
- Mitacs Globalink Graduate Award Holder of 15000 CADs
- Co-Founder and Team-Lead — Atom Robotics — VIT, Chennai
- Certified SOLIDWORKS Professional in Mechanical Design, Dassault Systèmes
- Certified SOLIDWORKS Associate in Additive Manufacturing, Dassault Systèmes
- Secured 1st place in multiple Robotic Competitions held Nationwide and Every detail is included in the Portfolio

## Volunteer Experience

- **Member of National Service Scheme** India
  *As a team, I had participated in and coordinated several social service activities benefitting the environment*
- **President of ATOM Robotics, VIT Chennai** India
  *An official team of VIT Chennai which conducts workshops, events and symposiums*
- **Core Committee of team Vibrance'20** India
  *Worked as part of a team in-charge of Hospitality Management*