Akshith Rajkumar

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Qualifications

Vellore Institute of Technology, Vellore, India *June 2018-April 2022*
Bachelors of Technology in Electronics and Communication Engineering *Cumulative GPA: 8.72/10.0*
Chettinad Vidyashram, Chennai, India *June 2003-May 2018*
CBSE - Computer Science, Physics, Chemistry, Mathematics *10^{th} CGPA 10/10, 12^{th} 96.4%*

Area Of Expertise

Design&Simulation Tools	MATLAB, Fusion360, Eagle, Proteus, Solidworks
Programming Tools	Keil, STMStudio, CubeIDE, ROS
Programming Languages	Python, C++, Embedded C, Shell, HTML, Java, APL, Verilog
Others	Power electronics, Embedded and Control system, Instrumentation

Professional Experience

Research Intern @ Indian Institute of Science (IISc), Bengaluru, India *September 2021 - Present*
Working on Human Robot Collaboration system using UR5 Cobot on control systems and planning algorithms. Implementing VR to improve perception and improve safety and productivity. (**Supervised by Prof. Abhra Roy Chowdhury**)

Globalink Research Intern @ York University, Toronto, Canada *July 2021 – September 2021*
Designed and adapted dynamic equations for FANUC Robotic manipulator. Worked on modeling the FANUC robotics arm. Developed an algorithm for Image based Visual Servo with eye-in-hand configuration.
(**Supervised by Prof. George Zhu**)

Illuminify Private Ltd (Accio Robotics), Bengaluru, India *April 2020 – January 2021*
Designed the electrical architecture and the control system od a prosthetic arm. Developed mobile robots for autonomous indoor assistance. Designed a beetle robot capable of traversing rough terrain.

Team ROVERX, VIT Vellore, India
Captain *March 2020 - July 2021*
Electronics and Instrumentation Engineer *May 2019 - March 2020*
Designed Mars prototype Rovers and competing on international level with other universities in URC, IRC and IRDC competition. Involved Power Electronics, Embedded Systems, control systems and sensor instrumentation.

Creation labs, VIT Vellore, India
Lab Manager *May 2020 - Present*
Research Engineer *May 2019 - May 2020*
Member of a group of engineers exploring different research ideas and implementing it on varied projects involving different domains. Conducting national level events like IDRL and working in collaboration with ISRO on low orbit satellite payload.

Publications

MDPI BIOSENSOR JOURNAL 2021 *Published*
Recent advances on IOT-assisted wearable sensor systems for healthcare monitoring.
The paper compiles various communication technologies and the devices commonly used in IoT-assisted Wearable Sensor Systems and deals with its various applications in healthcare and their advantages to the world. A comparative analysis of all the wearable technology in healthcare is also discussed with tabulation of various research and technology.

Patent

NAVISTICK *In Progress*

A device that can guide visually challenged people in an indoor social environment. It is capable of communicating with any social robots and navigating people in a closed environment. It has a finger guiding mechanism along with vibrational feedback for indicating direction.

Projects

Robotic Arm for Equipment Panel Servicing

The robotic arm was a 6DoF design with an LRL configuration with a differential End-effector. It was designed with the intention to make the control intuitive and to access a cartesian plane with speed and precision.

Soil collection and onboard analysis system

The design involves a dynamic scoop system that collects soil and stores it in different slots where multiple tests are done and its results are recorded. A variety of motors are used to design the dynamic system considering speed and compactness.

Prosthetic Right Arm

This project involved designing a right arm that had the functionality to hold different positions of the hand that could be programmable by the user. It was designed with micro DC motors and compact custom PCBs that is embedded in the arm.

Mars Rover Prototype

The project involved designing multiple versions of rover systems that can navigate extreme terrains and perform a variety of tasks. It involved both manual and autonomous control over long distance communication using an array of cameras.

SpaceShare – Designing space-grade PCB

This project involved designing a space-grade PCB with an array of sensors that will collect and relay the data from a low orbit satellite. This project was done in collaboration with ISRO & Exceed Space.

Geo-Fencing

Creating a virtual polygon using GPS coordinates to monitor the location of the subject and send notifications in case of breaching the perimeter. The concept implemented has various applications for oversight of people.

Academic Awards

Special Achiever's Award 2020-21	Awarded by Vellore Institute of Technology, Vellore, India
Achiever's Award 2019-20	Awarded by Vellore Institute of Technology, Vellore, India

Competition Awards

University Rover Challenge (URC) 2021	87.63/100 in Finals. Rank yet to be posted.
International Rover Design Challenge (IRDC) 2020	**8th** Worldwide. Drive System Innovation award
International Mars Hackathon (IMH) 2020	Placed 4th Worldwide. 3rd in Asia
Indian Rover Challenge (IRC) 2020	Placed 4th Worldwide. 2nd in Asia
University Rover Challenge (URC) 2019	Top 10 Worldwide. 3rd in Asia

Extra-Curricular

RASTRAPATI SCOUT A member of Bharat Scouts and Guides. I was awarded the Rashtrapati Award from the President.

IDRL (Indian Drone Racing League) Member of the organizing committee. Design and Implementation engineer of the course.

IETE (Institute of Electronics and Telecommunication Engineers) Member of the technical team of the Chapter. Worked on various projects and conducted events.