Vallari Devang Ashar

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Professional summary

Computer Science Engineering student specializing in AI and Robotics with expertise in autonomous systems and FPGA development. Led robotics teams to 1st place nationally in DD ROBOCON 2025 and top-20 internationally. Professional experience in mission-critical embedded systems at DRDO for fighter aircraft. Skilled in ROS2, machine learning, computer vision, and real-time programming with patent-pending industrial automation innovations.

Education

Vellore Institute of Technology Chennai, TN
BTech in CSE with Specialization in Artificial Intelligence and Robotics (CGPA: 8.8) *Sept 2022 - May 2026*

- Relevant Coursework: Machine Learning for Robotics, Robotic Perception, Robotics Modelling and Simulation, Kinematics Dynamics and Motion

Shri Ram Global School Bengaluru, KA
All India Senior School Certificate Examination (AISSCE), CBSE *April 2020 – May 2022*

Experience

Project Intern May 2025 – July 2025
CASDIC, DRDO (Combat Aircraft System Development and Integration Centre) *Bengaluru, KA*

- Worked on verification and validation of mission-critical embedded systems for next-generation fighter aircraft including Su-30 MKI upgrade programs
- Performed functional testing and diagnostics of flight control software on Xilinx Kintex-7 FPGA development boards using VHDL-based simulation and debugging tools
- Gained hands-on experience with avionics protocols, real-time signal processing, and hardware-in-the-loop (HIL) testing environments
- Collaborated with DRDO scientists on integration workflows for combat systems, contributing to performance validation under real-time constraints

Team Captain August 2024 – Present
TECHNOCRATS ROBOTICS *Chennai, TN*

- Leading a self-funded team to national and international competitions, including the development basketball playing robots for a prestigious competition DD ROBOCON, held at IIT Delhi
- Scored 100/100 in DD ROBOCON STAGE 1 2025, and secured 1st position among 84 national team
- Achieved 20th place among 100+ participants at International Rover Challenge 2025 with our Mars exploration rover, Abhimanyu

Robotics Research Intern Oct 2023 – April 2024
ACK ROBOTICS *Chennai, TN*

- Developed an Ackermann-style robot controlled by ROS2, utilizing the NAV2 stack, GPS, and Fields2Cover library to simulate field mapping and navigation in Gazebo
- Gained proficiency in navigation, mapping, and SLAM in ROS, achieving 90%+ navigation success rate in Gazebo simulation
- Implemented YOLOv8 and ResNet101 for detecting PCB anomalies, defects, and textureless industrial metal objects
- Acquired skills in documentation, development, and deployment of robotic software in a professional setting

Robotics Programmer March 2023 – August 2024
TECHNOCRATS ROBOTICS *Chennai, TN*

- Advanced to DD ROBOCON Nationals, achieving excellent results in stages 1 and 2, competing with more than 100 teams of excellent engineers from all over India
- Engaged in the creation of robots with both manual and autonomous capabilities, working with Raspberry Pi, Arduino, and ESPs using Python and C++ with ROS2
- Produced high accuracy results for autonomous ball shooting and target centering using computer vision and image processing techniques

Research

Quantum-Enhanced Spiking Neural Networks for Closed-Loop Neuromodulation Systems: A Theoretically Advanced Framework Oct 2024

- International Conference on Innovative Computing, Intelligent Communication and Smart Electrical Systems (ICSES -2024)
- Input through quantum dot sensors from brain neurons is converted to spike-based data, which is then treated as an input layer in QESNN.
- The output of the neural network creates a closed-loop neuromodulation circuit, utilising deep brain stimulation.

Patented Work

A Portable Welding Inspection System and Method For Detecting Structural Defects by Inspecting Weld Material Oct 2024

- Intellectual Property Patent Filed — IN 202441097583
- Developed an innovative portable welding inspection system integrating high-end cameras and ultrasonic sensors
- Created a multi-modal transformer for optimized ultrasonic signal processing
- Achieved system performance with:
  - Operational latency under 50 ms
  - 60 frames per second at 4K camera resolution
  - Ultrasonic data acquisition at 0.5-20 MHz frequency
  - 95% accuracy in detecting surface and subsurface welding defect

Projects

KIA - Open-source Robotic Arm | *Arduino, Raspberry Pi, Solidworks* Jun 2024

- Developed an open-source robotic arm called KIA, with various functionalities from bluetooth control via HC-05 to autonomous hand-shaking via camera output
- Visualized through MoveIt2 in Gazebo for smooth communication and movements

VITrace | *React Native, PostgreSQL, Resnet18* April 2024

- Developed a full stack Lost Item Tracing application with a team of 5 that won Top 5 / 164 teams in Solve-a-thon 2024, Got selected for implementation on all VIT campuses
- Full project documentation and demo linked here

Technical Skills

Languages: Python, C/C++, SQL, JavaScript, HTML/CSS, VHDL
Frameworks: ROS
Developer Tools: Git, Docker, VS Code
Simulation Software: Gazebo, Isaac Sim by NVIDIA, MATLAB
CAD: SolidWorks
FPGA Tools: AMD VIVADO

Courses

- **Machine Learning Specialization (DeepLearning.AI, Stanford Online, Andrew Ng)**
- **Foundations of Cybersecurity by Google**
- **Summer Analytics for Data Science by IIT Delhi**

Volunteering

Volunteer Teacher Jan 2024 - Mar 2024

E-Vidyaloka *Bishunpur, JK*

- Collaborated with government school officials to facilitate a smooth transition to online learning for 80-90 students
- Taught Mathematics to underprivileged 8th grade students in Jharkhand remotely