# AADITH WARRIER

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## EDUCATION

**B.E Mechanical Engineering** - Computer Programming, Autonomous Mobile Robotics, Control Systems — 2021 - 2025
Birla Institute of Technology and Science, Pilani

**Grade XII** - Physics, Chemistry, Math, Computer Science — 2019 - 2021
Maharishi Vidya Mandir, Chennai — Grade: 95.8%

**Grade X** — 2015 - 2019
The PSBB Millennium School, Chennai — Grade: 94.8%

## RESEARCH EXPERIENCE

**Embedded Systems and Robotics Lab, BITS Pilani** — Mar 2024 - Present
*Guide: Dr. Avinash Gautam*

- Implemented autonmous frontier exploration using RRT on a ground robot using Visual SLAM.
- Designed and validated the blueprint for a **low cost fully autonmous drone**.
- Developed simulations of the software stack for autonomous flight using **PX4, ROS2 and Gazebo**.

**MultiCog Lab, BITS Pilani** — Nov 2022 - Mar 2024
*Guide: Dr. Pratik Narang*

- Developed an efficient pipeline using **deep learning** to detect and enhance low visibility conditions in drone images.
- Implemented **object detection** methods for distress detection on roads and **image segmentation** to quanitfy them.
- Collaborated with a team of civil engineers to develop metrics to help authorities prioritize repair work.

## WORK EXPERIENCE

**Research Intern, Indira Gandhi Centre for Atomic Research** — May 2023 - July 2023
Project Title: Development of Visual Inspection Tool for hard to reach regions

- Designed a visual inspection tool for hard-to-reach regions with **robotic soft actuators** using CAD software.
- Achieved a reduction in size of the actuator, enabling traversal of tighter bends and smaller tubes

## PROJECTS

**Mechanical Team Lead, CRISS Robotics** — Feb 2022 - Feb 2023

- Designed a Mars rover to survey the north pole of Mars by generating maps and looking for traces of life. The design placed first in the International Rover Design Challenge 2023.
- Designed, fabricated, and operationalized a **robotic arm with six degrees of freedom**, capable of lifting 6 kilograms.
- Collaborated to implement **closed-loop control and inverse kinematics** to achieve precise orientation of the arm.

**Open Source Contributor** — January 2023
ONNX - Open Neural Network Exchange

- Coded a new API to enable users to download test data along with pre-trained models for 50+ models from ONNX Hub and added unit tests to update the continous integration pipeline.

## SKILLS

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| **Technical Skills** | Computer Programming, CAD (Solidwoks, Fusion360), Rapid Prototyping |
| **Languages** | Python, C/C++, LaTeX |
| **Frameworks/Libraries** | ROS/ROS2, PyTorch, Gazebo, OpenCV, Matplotlib, NumPy, OpenAI Gym, Git |

## PUBLICATIONS

**Fast and Lightweight UAV-based road image enhancement under multiple Low-Visibility conditions**
C. Kapoor, **A. Warrier**, M. Singh, P. Narang, H. Puppala, R. Srinivas, A. P. Singh
*PerCom Workshop 2023*