

SMRITHI S

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EXPERIENCE

Indian Space Research Organization (ISRO)

Aug 2023 - present

Engineer, Contract

- Developed algorithm and the software for **autonomously detecting and capturing free floating debris in zero gravity** using **eye-in-hand robotic arm system**.
- Developed an **online reactive trajectory generation routine** minimising the interception time of the robotic arm to the debris at lesser computational cost.

Indian Institute of Technology, Mandi (IIT Mandi)

Jul 2023 to Jul 2024

Research Intern

- Developed pose estimation algorithm using **template matching with chamfer distance** (RMS error in pose: 0.005 mm) and achieved contour-based size estimation accuracy within 0.36mm.
- Supported for evaluating advanced deep learning models on a custom bolt dataset, achieving the highest segmentation accuracy (mIoU: 0.95) with DeepLabV3+.
- Advisor: Prof. Amit Shukla, Center for AI and Robotics

Cummins Ind PVT LTD

Pune, India

Mechanical Test Ops and Lab Ops Engineer

Aug 2021 - May 2023

- Successfully completed a 500-hour Cycle6 test on CPS B6.7 engines, achieving a **14.2 percent** cost saving (7.37L) and **99.3 percent** data quality.
- Developed **uCheck tool and system health check** for test cell and engine health analysis. Increased data quality levels to **98.5 percent**
- Certified as **ISO/IEC 17025:2017 Internal Auditor for Laboratory Management Systems**

EDUCATION

National Institute Of Technology Karnataka(NIT-K, Surathkal)

Aug 2017 - May 2021

Bachelor of Technology, Department of Mechanical Engineering; **CGPA: 7.3/10.0**


Relevant Coursework: Automatic Control Eng, Graph theory, Mechanics of Machines, Machine Dynamics and Vibration

SKILLS

- | | | |
|---|--|---|
| • Languages: Python, C, C++ | • Platforms: Linux, Nvidia Jetson, Arduino | • Numerical Computing: MATLAB AND SIMULINK |
| • Libraries: PyTorch, KDL Orocos | • Tools: Solidworks, Auto-Cad, Creo-Pro E, Ansys Suite, Comsol Multiphysics, Gazebo, ROS, Git | |

PUBLICATIONS

Conference Papers

- S. P. S. K*, A. Shukla and S. Smrithi*, "Automated Vision-Based Bolt Handling for Industrial Applications Using a Manipulator," 2024 12th International Conference on Control, Mechatronics and Automation (ICCMA), London, United Kingdom, 2024, pp. 193-198, doi: 10.1109/ICCMA63715.2024.10843915 

ACADEMIC RESEARCH PROJECTS

Modelling and Simulation of Human Walking Towards Developing a Lower Limb Exoskeleton

Aug 2020 - April 2021

Under the guidance of Prof. K.R Guruprasad


- Bachelor Thesis:**
 - * Designed a lower limb exoskeleton using 2R manipulators, modeling human gait in MATLAB SIMULINK.
 - * PID control achieved joint angles with error under 5 degrees in Simscape.

Inverse kinematics solution formulation using neural network

Aug 2019 - Jan 2020

- Formulated loss function using inverse sinusoid activation with sigmoid to solve inverse kinematics problems and modelled in simulink. The results were tested on a 3-link 2 Degree of freedom planar robotic arm.

LEADERSHIP & EXTRACURRICULAR

- Vehicle Dynamics Head, Formula One Student team: Secured 7th place at Formula Bharat 2021. 
- Volunteer teacher:** for English and Science subjects for 4th and 5th grade at the KREC Kannada medium school.
- Volunteer teacher at Connectfor:** for mathematics to tribal communities girls through Evidyaloka NGO.