

# PRAJWAL WANJARI

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## EDUCATION

**Masters in Robotics and Autonomous Systems (with Mechanical Engineering concentration) (GPA - 3.83/4)** **May 2023**  
Arizona State University **Tempe, AZ**

- Relevant Courses: Modelling and Control of Robots, Advanced System Modelling, Dynamics and Control, Reinforcement Learning in Robotics, Deep Neural Networks, Multi-Robot systems, Autonomous Exploration systems, Design Optimization

**Bachelor's in Mechanical Engineering (GPA - 3.3/4)** **June 2021**  
Yeshwantrao Chavan College of Engineering **Nagpur, IND**

- Relevant Courses: Control System Engineering, Automation in Production, Production Management, CAD, CIM

## SKILLS

**Designing and simulation software:** CATIA V5, SOLIDWORKS, Siemens NX, AutoCAD, ANSYS Workbench, SCADA.

**Programming:** Shell scripting, C, C++, Python, MATLAB, PLC Siemens, CAN bus system, CNC G-Code, PostgreSQL.

**Processes:** CNC machining, Lathe, Milling, 3D printing, GD&T (ASME Y14.5 standards), SCADA PLC system, PLM.

**Others:** Microsoft office tools, Robot OS (ROS), Windows OS, Mac OS, Linux OS (ubuntu).

## RELEVANT EXPERIENCE

**Research Assistant/ Robotics Engineer** **May 2022 – May 2023**  
Intelligent Control and Estimation of Things Laboratory **Arizona State University, Tempe, AZ**

- Created various ground rover designs (using Solidworks) & performed simulations utilizing ROS, Gazebo with Python coding.
- Managed hardware development for 3 core hardware systems including controls, visual perception, and field mapping via integrating ROS with other hardware components i.e., NVIDIA Jetson Nano, RealSense depth cameras, sensors etc.

**Research Analyst** **March 2022 – May 2023**  
NASA Mission Operations & Science Data Centre **Arizona State University, Tempe, AZ**

- Collaborated with Program Manager to fulfill 50+ administrative and research tasks to support planetary science research at NASA mission operations (Psyche Mission- <https://www.jpl.nasa.gov/missions/psyche>).
- Interpreted statistical data and research conclusions, helping researchers take advantage of research findings and insights to enhance productivity by over 20%.

**Robotic Hardware Engineering Intern** **May 2022 - July 2022**  
Distributed Robotic Exploration and Mapping Systems Lab **Arizona State University, Tempe, AZ**

- Prototyped various boats, underwater & aerial drone designs (using Solidworks) and performed simulations operating ROS, Gazebo with C++ coding.
- Executed perception & mapping tasks and developed end-to-end system integration using ROS with PX4, OptiTrack motion capture system and other hardware components with team of 4.

**Graduate Researcher / Electro-Mechanical Engineer** **September 2021 - May 2022**  
Bio-Inspired Robotics, Technology & Healthcare Laboratory **Arizona State University, Tempe, AZ**

- Devised octopus-inspired n-degree of freedom (DOF) soft robot; led a team of 5 to design & conceptualize its control systems and hardware implementation ([4. Soft Robotics - https://birth.engineering.asu.edu/research/](https://birth.engineering.asu.edu/research/)).
- Designed and simulated catheter prototypes using Solidworks and ANSYS Workbench software and later 3D printing it for experimentations ([2. Magnetic Micro-Robots for Medical Applications - https://birth.engineering.asu.edu/research/](https://birth.engineering.asu.edu/research/)).
- Evaluated prototypes by modelling experimental setup, manufacturing prototypes, and conducting tests; boosting prototype efficiency by 25%.

## PROJECTS

**National Science Foundation - CPS Challenge (Team Project)** **January 2022 - July 2022**  
Course- Autonomous Exploration Systems **Tempe, AZ**

- Led group of 5 to simulate and construct a multirotor drone to throw a sensor probe outside a perimeter to a moving land rover so it could be imaged as it landed. (<https://cps-vo.org/group/CPSChallenge2021>).

**Multi-Rover System for Mars Exploration (Individual Project)** **September 2021 - December 2021**  
Course- Multi-Robot Systems **Tempe, AZ**

- Documented mathematical models & prepared simulations of a four-wheel and a six-wheel rover's motion on different terrain situations leveraging MATLAB software.
- Demonstrated leader follower formation control (using feedback linearization and linear Model Predictive Control system) with obstacle avoidance leveraging Robotarium libraries in MATLAB.
- Modified existing MATLAB code and re-illustrated all above-mentioned properties on WEBOT software, employing C++ language for controller code.