

# Parikshit Padole

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Aspiring researcher with a growing background in AI, robotics, and space technology. Focused on expanding knowledge and applying machine learning, control engineering, and satellite systems to develop innovative solutions for space exploration. Experienced in TensorFlow, OpenCV, satellite tracking, pose estimation, and gender classification. Currently advancing in satellite control projects with an emphasis on LVLH frames and reaction wheel systems. Dedicated to contributing to cutting-edge research and technical advancements in the space sector.

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## PROJECTS

### Satellite Attitude Control using Reaction Wheels | Imperial College London Hackspace August 2024 - Present

- Currently developing a simulation model to explore how reaction wheels stabilise a satellite's orientation by controlling angular velocity.
- Implementing a PID (Proportional-Integral-Derivative) control system in Python to regulate the satellite's attitude, with a focus on real-time numerical simulations and control algorithms.
- Applying Genetic Algorithms (GA) to optimise PID parameters, aiming to improve control accuracy and minimise oscillations in satellite orientation.
- Technologies/Tools: Python, NumPy, Matplotlib, Manim, Control Theory, PID Controllers.

### Google Street View Gender Classification | London School of Economics February 2024 - Present

- Developing a gender recognition model using key points extracted from human pose estimation models applied to Google Street View images with blurred faces.
- Technologies/Tools: OpenPose framework, Random Forest, Feed-forward Neural Network (FNN), Keras (TensorFlow backend).

### Earth Rock Classifier | Ulster University June 2024 - July 2024

- Developed a machine learning system for automated rock identification and classification. Model accuracy 94%.
- Technologies/Tools: Raspberry Pi 4B, Logitech HD webcam, Python, TensorFlow, OpenCV, ResNet, CNN.

### Satellite Tracking and Trajectory Prediction Application | Ulster University January 2024 - August 2024

- Developed a web application that enhances Space Situational Awareness (SSA) by providing real-time satellite tracking and trajectory predictions for Earth's orbit.
- Simulated rocket launch trajectories based on user-defined parameters.
- Implemented an LSTM model with 92% accuracy using a dataset of 600 satellite trajectories.
- Technologies/Tools: JavaScript, Python (Flask), React, Satellite.js, ThreeJS, LSTM model, TLE data, NumPy, Matplotlib.

### Robotic Arm (Mini) | Dharampeth M.P. Deo Memorial Science College May 2021 - July 2021

- Demonstrated a 3-axis robotic arm at an inter-school competition held at Visvesvaraya National Institute of Technology (VNIT), Nagpur. The project showcased practical robotics skills and design capabilities for high school students.
  - Technologies/Tools: Arduino UNO, Servo motors, Arduino IDE (C/C++), 3D Printing.
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## TECHNICAL SKILLS

- **Programming Languages**: Python, JavaScript, R, SQL, Embedded C, C++
- **Libraries & Frameworks**: TensorFlow, OpenCV, PyTorch, Keras, Pandas, NumPy, SciPy, Matplotlib, ReactJS, NodeJS
- **Tools & Platforms**: Visual Studio Code, PyCharm, Git, Fusion 360
- **Prototyping**: 3D Printing, Laser Cutting
- **Productivity Tools**: Microsoft 365, Zoom Workspace

## EXPERIENCE

### Imperial College London

London, United Kingdom

Multimode Co-pilot (Teaching Support)

February 2023– Present

- Collaborated with faculty and students to deliver a seamless hybrid learning experience, integrating both in-person and online modalities.
- Set up and configured classroom technology, ensuring optimal audio and video connectivity, and provided timely technical support and troubleshooting.
- Fostered active engagement between in-person and remote students, promoting an inclusive learning environment.
- Coordinated effectively with faculty, AV/IT teams, and program coordinators to ensure operational efficiency and enhance the student learning experience.

### London School of Economics

London, United Kingdom

Research Assistant

February 2024 – Present

- Contributing to the development of a gender recognition model using key points data from human pose estimation (OpenPose)
- Implemented machine learning models, including neural networks and XGBoost, for binary gender classification based on pose key points.

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## EDUCATION

### Ulster University London Branch Campus - London, United Kingdom

January 2022 – September 2024

BSc (Hons) Computing Systems

Grade: Pending

Relevant Modules: COM161 (19381) - Software Development, COM410 (34888) - Software Development II, COM499 (34891) - Artificial Intelligence, COM444 (34893) - Networks and Communications, COM661 (51465) - Full-stack Strategies and Development, COM683 (51489) - Edge and Embedded Intelligence.

### Dharampeth M.P. Deo Memorial Science College - Nagpur, India

September 2019 – October 2021

High School/ A – levels

Grade: 90%

Subjects: Physics, Chemistry, Maths, Computer Science and English

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## COURSES

Machine Learning with Python | FreeCodeCamp

Scientific Computing with Python (Beta) | FreeCodeCamp

Simulink Onramp | MATLAB

Attitude Control with Momentum Exchange Devices | University of Colorado Boulder

Artificial Intelligence | IBM

Python Object-Oriented Programming | LinkedIn

MATLAB Onramp | MATLAB

React + Redux | SoloLearn App

Motion under gravity | The Open University

Scattering and tunnelling | The Open University

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## REFERENCES

Available upon Request