

# Adip Ranjan Das

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## Personal statement

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Result-oriented Robotics postgraduate with hands-on industry experience and a keen interest in emerging technologies. Strong problem-solving abilities and a passion for exploring the possibilities of Robotics and Artificial Intelligence. Seeking entry-level positions in Robotics, Software, or Embedded Systems to contribute to cutting-edge projects and drive innovation in the field.

## Employment History

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### Robotics Engineer, GI Healthcare Industries Limited, Bristol, UK

*(December 2022 – April 2023)*

Achievements and responsibilities:

- Developed the conception, design, and testing of the pioneering prototype of a fully Autonomous Cooking Robot, leveraging expertise in Robot Operating System (ROS), sensor integration, Python, and C++.
- Developed the web interface for the robotic system using Django and Redis, while taking charge of both the backend and frontend development to ensure seamless functionality and user experience.
- Employed CAD (Fusion360) and 3D printing technology for rapid prototyping, successfully bringing innovative designs to life and expediting the product development process.
- Conducted extensive research to inform the design decisions, ensuring optimal performance and efficiency of the Autonomous Cooking Robot.
- Utilized Raspberry Pi and Arduino boards to enhance the robot's hardware capabilities and enable robust control systems.
- Skills Utilized: ROS, Python, C++, CAD (Fusion360), Blender, Tkinter, Raspberry Pi, Arduino.

### Software Engineer, Accenture Solutions Pvt. Ltd., Bangalore, India

*(August 2020 – June 2022)*

Achievements and responsibilities:

- Developed and implemented automation frameworks utilizing Cucumber, which facilitated seamless collaboration between cross-functional teams and enhanced test scenario design.
- Played a pivotal role in designing and executing automated test scenarios, ensuring comprehensive test coverage of both software backend and frontend components.
- Independently managed a critical module of a project, taking ownership of end-to-end testing and automation, leading to timely and high-quality deliverables.
- Skills Used: Java, Selenium, Automation Testing, Cucumber Framework, Bitbucket.

### Machine Learning Intern, HighRadius Corporation, Bhubaneswar, India

*(December 2019 – May 2020)*

Achievements and responsibilities:

- Leveraged expertise in machine learning for the development and implementation of cutting-edge models.

- Conducted comprehensive experimentation on diverse machine learning algorithms, utilizing the Scikit Learn library, to optimize model accuracy and performance.
- Proficiently applied feature extraction and creation techniques to enhance the effectiveness of machine learning models.
- Collaborated with cross-functional teams to deliver innovative solutions and contribute to the company's machine-learning capabilities.
- Skills Used: Machine Learning, Scikit Learn, Feature Extraction, Model Development, Accuracy Optimization.

## **RPA Intern, HighRadius Corporation, Bhubaneswar, India**

*(April 2019 – November 2019)*

Achievements and responsibilities:

- Extensively contributed to Robotic Process Automation (RPA) initiatives at HighRadius Corporation, leveraging cutting-edge technologies such as Selenium and Java.
- Developed and implemented highly efficient bots that autonomously extracted critical data and seamlessly stored it in the database.
- Played a pivotal role in enhancing workflow automation, significantly reducing manual intervention, and streamlining business processes.
- Skills Used: Robotic Process Automation (RPA), Selenium, Java, SQL, Database Management.

## **Education**

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### **PhD in Robotics**

#### **Heriot-Watt University, Edinburgh, UK**

*(November 2023 – October 2027)*

- **Project title:** Dual-robot manipulation in industrial settings for assembly and disassembly electronic equipment and coordinated actions between human workers and robotic agents using machine learning.
- **Project description:** This thesis addresses the understudied aspects of robotic assembly and disassembly in the context of the Fourth Industrial Revolution. The focus is on developing a fully autonomous system capable of efficiently performing assembly and disassembly tasks, considering the entire chain from design to reassembly. The main objective is to enhance the speed and affordability of production by implementing a vision-based robotic system for electronic equipment assembly/disassembly in industrial setups. The research aims to address uncertainties in end-of-life products without prior product-specific knowledge and explores the potential of physical human-robot collaboration in achieving economic feasibility. The project utilizes technologies for dual-robot manipulation, physical interaction, and machine-learning algorithms.

### **Masters in Robotics (Distinction)**

#### **University of Bristol, Bristol, UK**

*(September 2022 – September 2023)*

- **Modules Taught:** Robotics Systems, Robotic Research and Technology Methods, Introduction to Artificial Intelligence, Bio-Inspired Artificial Intelligence, Robotics Fundamentals, Machine Vision, and Assistive Robotics.
- **Dissertation:** Conducted research on "Occupational Upper-Limb Exoskeleton" to enhance human-robot interaction and workplace safety.

[https://github.com/adipdas11/UOB\\_UWE\\_Dissertation](https://github.com/adipdas11/UOB_UWE_Dissertation)

- **Projects:**
  1. Line Following Challenge: Successfully developed and implemented algorithms to enable precise line-following capabilities in autonomous robots.  
<https://youtu.be/8sXg2OanM98>
  2. Investigating IR Sensor Communication: Led a team to investigate and optimize IR sensor communication for seamless robot-to-robot following.  
[https://github.com/adipdas11/KIIT\\_UOB\\_UWE\\_Reports/blob/main/Robotic\\_Systems\\_Assignment\\_2.pdf](https://github.com/adipdas11/KIIT_UOB_UWE_Reports/blob/main/Robotic_Systems_Assignment_2.pdf)
  3. Apple Counting Using Machine Learning: Employed machine learning techniques to accurately count apples in an orchard, streamlining agricultural processes.  
[https://github.com/adipdas11/KIIT\\_UOB\\_UWE\\_Reports/blob/main/Machine\\_Vision\\_Report.pdf](https://github.com/adipdas11/KIIT_UOB_UWE_Reports/blob/main/Machine_Vision_Report.pdf)
  4. Case Study of Socially and Physically Assistive Robots: Conducted an in-depth analysis of socially and physically assistive robots, examining their impact on human-robot interaction and potential applications in various settings.  
[https://github.com/adipdas11/KIIT\\_UOB\\_UWE\\_Reports/blob/main/HRI\\_individual\\_report.pdf](https://github.com/adipdas11/KIIT_UOB_UWE_Reports/blob/main/HRI_individual_report.pdf)

**Bachelors in Electronics and Computer Science (GPA: 8.5/10)**  
**Kalinga Institute of Industrial Technology, Bhubaneswar, India**  
*(July 2016 – June 2020)*

- **Modules Taught:** Microcontrollers and Microprocessors, Digital Electronics, Software Algorithms, Programming Languages etc.
- **Major Project:**
  1. Computer Vision-Based Road Sign Detection for Driving Assistance: Implemented an innovative Computer Vision technology to detect road signs and signals, contributing to enhanced driving assistance systems. Utilized cutting-edge algorithms to accurately identify and interpret traffic signs, promoting safer and more efficient navigation on the roads.  
[https://github.com/adipdas11/KIIT\\_UOB\\_UWE\\_Reports/blob/main/B\\_Tech%20KIIT%20University%20Minor%20Project.pdf](https://github.com/adipdas11/KIIT_UOB_UWE_Reports/blob/main/B_Tech%20KIIT%20University%20Minor%20Project.pdf)

## Key Skills

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Programming Languages	: Python, Java, C++
Tools and Libraries	: Robot Operating System (ROS), Django, Redis, Scikit Learn, Tensorflow, Git, OpenCV, Linux, MySQL
Front end	: HTML, CSS, Tkinter, PyQt
CAD	: Fusion360, Blender
Simulation	: Gazebo
Microcontrollers & Microprocessors	: Arduino, ESP32, ESP8266, Raspberry Pico, Raspberry Pi, ATmega, ATtiny
Transferrable Skills	: Teamwork, Communication, Adaptability, Problem-Solving, Time Management
Language	: English (Level – C2)

## Certification

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- Bristol Plus Award (University of Bristol, UK, 2023)
- Learning Python (LinkedIn Learning, 2023)
- Fusion360: Design for Mechatronics (LinkedIn Learning, 2022)
- ROS1 Developer (RigBetel Labs LLP, 2021)
- Robotics and IoT (Skyy Rider Institution, 2018)

## Additional Projects

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- Developed a robotic hand in Fusion360 and performed teleoperation within the ROS environment using Google's MediaPipe library for hand landmark detection in RVIZ. ([Project link](#))
- Developed a custom quadruped robot using Fusion360 and implemented ROS champ package for precise control and visualization in RVIZ. ([Project link](#))
- Implemented YOLOv3 object detection model, demonstrating expertise in computer vision and deep learning techniques for efficient and accurate real-time object recognition. ([Project link](#))
- Implemented facial landmark detection using OpenCV and Google's MediaPipe library, showcasing expertise in computer vision and image processing techniques. ([Project link](#))
- Developed pose estimation system utilizing OpenCV and Google's MediaPipe library for accurate human pose tracking. ([Project link](#))
- Implemented Hand Landmark Detection utilizing OpenCV and Google's MediaPipe library, showcasing proficiency in computer vision and image processing techniques. ([Project link](#))
- Developed a 2DOF warehouse robot prototype for Fortrax Robotics, integrating ROS, SLAM, Moveit, and navigation with a digital twin in Gazebo. ([Project link](#))
- Developed and simulated a waiter robot in Fusion 360 and Gazebo, utilizing ROS and SLAM for navigation. Implemented a user-friendly UI with PyQT to enable seamless table navigation in the simulated environment. ([Project link](#))
- Developed and operated quadcopters, hexacopters, and racing drones equipped with various flight controllers such as Pixhawk, Naza, and F7, utilizing Betaflight and iNav firmware. Leveraged autonomous waypoint navigation to enhance drone capabilities and control. ([Project image](#))

## Hobbies & Interests

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In my leisure time, I indulge in a variety of hobbies and interests that contribute to both personal growth and enjoyment. Trekking serves as an adventurous outlet. Swimming offers a refreshing and invigorating experience, promoting a healthy lifestyle, and providing a sense of relaxation. Engaging in badminton not only fuels my competitive spirit but also fosters teamwork and coordination. Chess has become a favourite pastime, nurturing my strategic thinking, and honing analytical skills.