# Kunal Jadhav

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## CAREER OBJECTIVE

Robotics Software Engineer fresher skilled in ROS 2, Python, C++, and computer vision, with hands-on experience in robotic simulation, OpenCV-based perception, and embedded platforms like Arduino and Raspberry Pi. Strong foundation in distributed robotics architecture and real-time control, with a keen interest in advancing expertise in SLAM, autonomous navigation, and AI-driven robotics.

## EDUCATION

**Lovely Professional University** **Aug. 2020 – Jul 2024**
*Bachelor of Technology in Mechatronics Engineering* *Jalandhar, Punjab-India*

## CORE COMPETENCIES

**Programming**: Understanding of Python (**NumPy, Matplotlib, Panda) and C++** along with **ROS2** and **OpenCV**
**Simulation & Robotics Tools:**: Beginner in **Gazebo** and **Rviz** for simulations, **URDF** and analysis
**Design and CAD**:Proficient in **CREO**, **SolidWorks** for design and modeling.
**Soft Skills**: Efficiently able to Manage time and possess **leadership** qualities with **Analytical thinking**

## ACADEMIC PROJECTS

**Drone using KK Flight Controller** | *Flight Controller, RX-TX, Module, Brushless Motors* **August 2025**

- Assembled a quadcopter with **KK flight controller, RX/TX** modules, **ESC–motor integration**, and PID tuning.
- Gained expertise in embedded systems, flight stability control, UAVs, **aerial robotics**, and autonomous flight research.

**AirCanvas — Computer Vision Project** | *Python, Mediapipe, OpenCV* **May 2025**

- Developed an **AirCanvas** application in **Python** using **OpenCV and MediaPipe**, enabling real-time hand-tracking and gesture recognition for virtual drawing.
- Implemented **computer vision algorithms** for dynamic **gesture control**, enhancing skills in **image processing**, real-time tracking, and interactive human-computer interfaces.

**Turtle Sim ROS 2 Simulation** | *ROS2, Python, Linux* **March 2025**

- Built a **ROS 2 TurtleSim simulation** with custom nodes for motion control, strengthening **robotics software and Python skills.**
- Engineered and tested ROS 2 nodes for sensor data processing and actuator control, **improving real-time robotic communication** and system reliability.

**ROS 2 Virtual Object Finder with OpenCV** | *ROS2, Python, Linux* **January 2025**

- Built a **ROS 2 TurtleSim simulation** with custom nodes for motion control, strengthening **robotics software and Python skills.**
- Engineered and tested **ROS 2 nodes** for sensor data processing and actuator control, **improving real-time robotic communication** and system reliability.

**Customized Automated Wheelchair Assembly** | *Raspberry pi, Python, ROS2, Linux, Solidworks* **January 2024**

- **Invented and patented a Wheelchair System with Sanitation Assembly** — independently **conducted research, ideation, and end-to-end design** for improving mobility and hygiene of disabled patients
- **Led complete lifecycle of innovation** — from concept, research, and **SolidWorks** design to prototype of a **cost-effective** wheelchair sanitation system, addressing elderly and disabled patient care.

**Robotic Arm — Bluetooth-Controlled, 3D-Printed Manipulator** | *Arduino, SolidWorks, C++* **December 2023**

- Designed and **3D-printed a robotic arm** prototype using **SolidWorks CAD** modeling and additive manufacturing techniques
- Programmed **Arduino (C++)** with Bluetooth communication for **wireless control** of arm movements and task execution.

**Track-Bot — Line-Following Robot** | *Arduino, L298N, C++* **November 2023**

- Designed and implemented an autonomous line-following robot using **Arduino, IR/ultrasonic sensors**, **L298N motor driver**, and **DC motors** for real-time navigation and obstacle avoidance.
- Optimized Arduino motor control with **sensor fusion** and embedded **C++** for accurate navigation and **obstacle avoidance**..

**Planetary Gear System** | *SolidWorks* **September 2022**

- Designed and simulated a **Planetary Gear System** using **SolidWorks and CAD** tools, applying kinematic analysis and mechanical design principles relevant to robotics actuation and motion control.

**Four-Stroke Engine** | *Creo Parametric* **June 2022**

- Modeled and analyzed a **Four-Stroke IC Engine** using SolidWorks, focusing on mechanical dynamics, **assembly design**, and motion study to strengthen foundational knowledge in **mechatronics** and **robotics systems**.

## PATENT

**Customized Automated Wheelchair Assembly** **December 2023**
*202311078752 A · Issued Dec 29, 2023*

**Modular Self-Dismantling Drone for Multi-Point Surveillance** **May 2025**
*Application No.: 202511060537, India, 2025 (Complete filed)*

## CERTIFICATION

**ROS 2 for Beginners Level 3 - Advanced Concepts** **June 2025**
*ROS 2 Advanced – actions, services, simulation — UDEMY*

**ROS 2 for Beginners Level 2 - TF — URDF — RViz — Gazebo** **March 2025**
*ROS 2 Advanced – URDF, RViz, Gazebo — UDEMY*

**ROS 2 for Beginners** **March 2025**
*ROS 2 Nodes, RQT Graph, Services, Python — UDEMY*

**OpenCV Bootcamp** **March 2025**
*OpenCV and Python with NumPy and Matplotlib — OpenCV University*

**Machine Learning** **February 2025**
*Supervised ML – Regression, Classification, Prediction — COURSERA*

**Computer Vision and Image Processing** **December 2024**
*Image Processing, Feature Extraction — COURSERA*

**Electric Vehicle Making in SolidWorks** **August 2023**
*Design: SolidWorks Modeling, Assembly, and Components*

**Advanced Modeling and Assembly in CAD** **June 2022**
*Advanced CAD: 3D Modeling, Assembly, and Design*

**Control Systems** **May 2022**
*Transfer Function, Root Locus, Open/Closed Loop — UDEMY*

**Arduino** **May 2022**
*Arduino Coding, Understanding, and Programming — UDEMY*

## POSITION OF RESPONSIBILITY

**Pahal an Initiation** **Aug 2020 – Mar 2023**
*Director* *Lovely Professional University*

Volunteered in student projects, promoted to Director of Graphic Design, and led design as well as technical teams.

**National Service Scheme** **Mar 2023 – Feb 2024**
*Volunteer* *Lovely Professional University*

Organized community service drives and technical workshops while developing teamwork and leadership abilities.