SCTR'S
Pune Institute of Computer Technology
Department of Electronics & Telecommunication Engineering (E&TCE)

Sr. No	Date	Task Given	Tasks Completion status	Guide Signature
1		Literature survey on AI/ML-based robotics	Completed	
2		Study existing SLAM algorithms GMapping/RTAB-Map)	Completed	
3		Research vision-based object detection using CNNs	Completed	
4		Prepare simulation environment setup (ROS2)	Completed	
5		Implement initial CNN-based object detection pipeline	Completed	
6		Integrate LiDAR and IMU data into simulation	Completed	
7		Implement basic SLAM pipeline in simulation	Completed	
8		Develop multi-sensor data fusion for localization	Completed	
9		Train CNN models on COCO/ImageNet datasets	Completed	
10		Implement object detection testing in simulation	Completed	
11		Test object detection accuracy with simulated data	Completed	

12		Integrate SLAM and vision modules	Completed	
13		Test SLAM-based localization accuracy in simulation	Completed	
14		Implement PID control for simulated motion	Completed	
15		Simulate autonomous navigation using path planning	Completed	
16		Evaluate obstacle avoidance strategies	Completed	
17		Integrate reinforcement learning for path optimization	Completed	
18		Testing: obstacle detection and avoidance performance	Completed	
19		Develop error handling and fail-safe routines	Completed	
20		Evaluate overall system performance in simulation	Completed	
21		Compare CNN model accuracy vs. baseline detection models	Completed	
22		Conduct literature survey update with latest AI/ML techniques	Completed	
23		Optimize multi-threaded ROS2 node communication	Completed	
24		Implement data logging and analysis of the features	Completed	

25		Benchmark SLAM performance with varying dataset conditions	Completed	
26		Analyze and document performance metrics	Completed	
27		Prepare final demonstration scenario (indoor simulation)	Completed	
28		Finalize software integration and documentation	Completed	
29		Write final report and prepare presentation slides	Completed	
30		Submit report and complete final evaluation	Completed	