

KASHIF ANSARI (Robotics Engineer)

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EXPERIENCE

STEER-Tech | Robotics Software Engineer

Jan 2025 – Present | Maryland, US

- V-SLAM with voxel-vision on edge; ensembled depth and segmentation NNs for risk-aware real-time point cloud and 3D bounding boxes.

ISR-SEIL | Robotics Simulation Engineer (GRA: Assoc. with Army Research Lab)

Feb 2024 - Present | Maryland, US

- Modeled the AGR (Husky) from scratch, integrating perception sensors for V-SLAM and a Nav2 inspired navigation stack with ROS2
- Built 10k m² off-terrain Digital Twin environments for robust planning and Multi-Robot, Swarm strategies using ROS2 and IsaacSim.
- Developed a custom testbed and setup cobot training environment with RL in IsaacLab for benchmarking and model optimization.
- Simulated tendon-based finger joints and generated synthetic data with domain randomization for VLM-based manipulation in IsaacSim.

Kanan Park Technologies | Robotics Trainee Engineer (Part-time R&D)

Oct 2021 – April 2022 | Pune, India

- Trained a walking controller for the bipedal Cassie robot in MuJoCo and applied reward shaping in Robosuite for RL policy optimization.
- Designed and 3D printed a 3-DoF Robotic arm for Auto Soldering System, along with sensor-fusion prototyping with Ext. Kalman Filter.

Other Experiences | Lab Assistant and Trainer / Mechatronics and Design Engineer

July 2021 – Oct 2023 | India

- Integrated MoveIt with depth estimation and semantic segmentation deep models for safety based motion planning of UR3 arm.
- Implemented algorithms for inverse kinetics across diverse 6-DoF robot arms mounted on mobile base with 28.5% faster computation.
- Developed Swerve Drive modules for holonomic autonomous farm rover and drafted 350+ precision components using SolidWorks for fabrication & testing of a Quadruped and an Autonomous Underwater Vehicle following its Rendering & Photo-realistic Visualization.

EDUCATION

University of Maryland (UMD) | M. Eng in Robotics Engineering | CGPA: 3.78 / 4 | Expected: May 2025

Maryland, US

- *Coursework:* Software Dev. for Robotics, Robot Modeling, Controls, Path Planning, Perception, Robot Learning, LLMs for Robots

Pune University (SPPU) | B. Eng in Mechanical Engineering | CGPA: 9.14 / 10 | Aug 2018 - May 2022

Pune, India

- *Coursework:* Mechatronics & Robotics, Industrial Automation, Systems Engineering, CAD, CAE, FEA, Adv. Manufacturing, MBD

PROJECTS

Multi-Robot Exploration and Synched Industrial Operation.

| ROS2, IsaacSim, Nav2, Behavior Trees, OMPL, MoveIt | Linux

- Enabled three AMRs to autonomously explore & avoid dynamic obstacles, scan areas (3D LiDAR), and generate individual maps.
- Merged individual scanned maps in real-time aswell as statically to create a unified map for navigation through selcted poses using Nav2.
- Synchronized 6DoF Panda Arm with the three robots using Behavior Trees to perform screw/unscrew operations autonomously.

Brain-Controlled Robotic System Using EEG Signals and ROS2.

| R-Pi, Muse2, EEG, ROS2, Isaac Sim, ML, Python | Linux

- Optimized EEG data acquisition from Muse2 EEG headband using Mind-Monitor to extract human brain intuitions of motor actions.
- Designed a BCI system integrating Machine Learning voting classifier for human thoughts classification into mobile robot commands.
- Achieved sim-to-real transfer using IsaacSim and Raspeberry-Pi controlled mobile robot using multi device ROS2 DDS networks.

Dynamic Deep RRT for Real-Time Navigation in Dynamic Environments

| Deep Learning, RRT*, Python, TensorFlow | Linux

- Developed a Dynamic Deep RRT* algorithm for real-time adaptability and ~30-45% time efficient navigation in dynamic environments.
- Generated 20k paths across 100 diverse workspaces, boosting adaptability, achieving 0.6× faster computation vs. classical RRT*
- Extended the algorithm to handle dynamic obstacles and adapt to real-time environmental changes, reducing time complexity notably.

Turtlebot3 Navigation through maze as per battery location in Logical Camera

| ROS2, Gazebo, RViz, YOLO, C++, | Linux

- C++ pipeline using Nav2 messages to navigate through ArUco markers using 5 virtual static RGB camera transforms.
- Developed pipeline from scratch for depth estimation corner/edge detection, object tracking, and frame de-blurring techniques.
- Using darknet and monocular depth NN generated real time 3D-Point cloud and tracking custom objects using YOLO-3D Bounding Box

SKILLS

IsaacSim, IsaacLab, Robo Suite, MuJoCo, Unity, Unreal Engine, ROS2, CNN, VLM, PX4, Version-Control: Git, Agile Methodologies: Jira, Raspberry-Pi, Nvidia Jetson, C++, Python, Matlab, Rust, OpenGL, SolidWorks, Fusion360, Rapid prototyping, 3D-Printing, Figma, Blender, KeyShot, Illustrator, Premiere Pro, Photoshop, Indesign, G-Suite, LaTeX, MS-Office, Doxygen, Wordpress.

PUBLICATIONS

Design and Development of an Auto Inflatable Airbag as Fail Safe for Unmanned Aerial Vehicle.

First Author i-MACE, Elsevier

Development of Unmanned Aerial Vehicle for Remote Live Streaming on Web Dashboard.

Co-Author i-MACE, Elsevier

Generative Design for Structural Optimization and fabrication of a Robotic Manipulator.

First Author Under revision

PATENTS

Dentist's mouth-mirror with a flexible adjustable neck and compact lamp module for indirect lighting.

First Inventor Utility + Design

Last updated: April, 2025