

Sachin Bhadang

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Education

UC San Diego

MS ECE IN INTELLIGENT SYSTEM, ROBOTICS AND CONTROL

San Diego, USA

2025 - 2027

Indian Institute of Technology Kanpur

B.TECH IN MECHANICAL & ELECTRICAL ENGINEERING (DOUBLE MAJOR) - 8.2/10

Kanpur, India

2020 - 2025

Experience

Cognitive Robotics Laboratory | UCSD

RESEARCH COLLABORATOR (ADVISOR: PROF. HENRIK I. CHRISTENSEN)

Oct 2025 – Present

- **Action Representation for VLAs:** Investigating wavelet-based methods for tokenizing continuous action sequences in Vision-Language-Action models; analyzing frequency-time representations to improve compression and generalization

Kikobot (Startup)

FIRMWARE/ROBOTICS ENGINEER

Jun 2025 – Sep 2025

- **Actuator Development:** Implemented custom FOC firmware on STM32 for BLDC motors with harmonic drives; integrated TI driver boards and MA600 encoders over SPI; designed CAN-FD for multi-joint coordination; tested gravity compensation to improve backdrivability and safety.
- **6-DOF Manipulator Platform:** Integrated with HuggingFace LeRobot for data collection and imitation learning; trained ACT/Diffusion policies and applied novel-view synthesis to mitigate camera jitter; developed an embedded inverse-kinematics solver (no ROS) and a cross-platform operator UI (Windows/Linux).

PEARL Lab | TU Darmstadt

RESEARCH INTERN (ADVISORS: PROF. GEORGIA CHALVATZAKI)

🔗 ACSG | 🔗 Replanner | 🔗 Report

Jan 2024 – Aug 2024

- **Action-conditioned scene graphs:** Trained with CNN-GRU PPO policies in AI2-Thor to reveal occluded/hidden objects
- **Replanning pipeline:** Leveraging visual feedback for subtask failures and environment changes to replan subtasks.
- Worked on exploration policies for scene-representations capturing object relationships, enabling dynamic replanning in long-horizon manipulation tasks; Validated methods in simulation and on the Tiago++ mobile manipulator

Carleton University, Canada

MITACS GLOBALINK INTERN (ADVISOR: PROF. HASHIM MOHAMED)

May 2023 – Jul 2023

- **OOD Detection for Automotive Perception:** Designed an OOD detection pipeline combining outlier exposure, GAN-generated outliers, and learned confidence scoring to improve safety in automotive perception.

Intelligent Systems Lab | IIT Kanpur

RESEARCH ASSISTANT (ADVISORS: PROF. TUSHAR SANDHAN, PROF. LAXMIDHAR BEHERA)

Jan 2022 – Sep 2023

- **Bin-Picking (Novel Objects in Clutter):** Built a category-agnostic instance segmentation dataset and benchmark; developed analytical grasp detection and evaluated on a UR10.
- **Fruit Harvesting (Occluded Scenes):** Trained PointNet++ model for 6-DoF grasp pose estimation for fruit plucking; implemented extended Jacobian-PID control for a 9-DoF Husky+UR5 mobile manipulator.
- **Brainwave-Controlled Wheelchair (Autonomous Navigation):** Led hardware/PCB design and sensor integration; implemented ROS navigation (mapping, localization, planning) with LiDAR, depth cameras, IMU and encoders; Report | Video | Patent

Publications

Method and system of Brainwave Controlled Wheelchair with Intelligent Tagging Assistant 🔗

J Meenakshinathan, T Sandhan, V Gupta, S Bhadang, L Behera

Patent

Bin-picking novel objects through category-agnostic-segmentation: RGB matters 🔗

P Raj, S Bhadang, G Chaudhary, T Sandhan, L Behera

IEEE International Conference on Robotic Computing 2023

Learning 6DoF Grasp-poses in Occluded Scenes Using RGB and 3D Point Cloud Modalities 🔗

AD Mathur, S Bhadang, P Raj, L Behera, T Sandhan

IEEE NCC 2023

Design of AI Ground Robots for Intelligent Combat in a Dynamic Arena 🔗

Poster accepted at IEEE ICRA 2022

Skills

Languages/Libraries

C, C++, Python, Bash, PyTorch, OpenCV, Open3D, Bazel, Git, LaTeX, SLURM, PyQt/Qt

Robotics

AutoDesk Fusion 360, AutoDesk Eagle, EasyEDA, ROS, RViz, Arduino, STM32

Simulators

Gazebo, AI2Thor, Habitat, LIBERO, MuJoCo, PyBullet

Robots

UR5/UR10, ClearPath Husky, Tiago++