JAY KARHADE

jaykarhade3@gmail.com http://jaykarhade.github.io

EDUCATION

Robotics Institute, Carnegie Mellon University *August 2022 - Present*
M.S. Robotics *Overall GPA: 4.08 (4.00)*

Birla Institute of Technology and Sciences, Pilani *August 2018 – June 2022*
B.E. Electrical and Electronics Engineering *Overall CGPA: 8.81 (10)*
Minor in Robotics and Automation *Minor CGPA: 9.62 (10)*

Army Public School, Pune *April 2017 - June 2018*
Class 12 *Score: 96.8% (100%)*

RESEARCH EXPERIENCE

AIRLab, Carnegie Mellon University *October 2022 - Present*
Graduate Research Assistant *Pittsburgh, PA*
- Advised by Prof. Sebastian Scherer
- Multi-modal Localization for Multi-Robot SLAM.

Advanced Robotics Centre, National University of Singapore *April 2021 - Dec 2021*
Visiting Undergraduate Researcher *Remote due to COVID*
- Advised by Prof. Marcelo Ang, thesis on AI for Vision.
- GAN based Point Cloud Rendering and Novel View Synthesis.

Edifice Lab, Arizona State University *May 2021 - July 2021*
Summer Research Intern *Remote due to COVID*
- Advised by Prof. Thomas Czerniawski on 3-D Reconstruction.
- Explored techniques for Dynamic Object Removal and Point Cloud Compression.

BITS Pilani *October 2020 – May 2022*
Research Assistant, Prof. Rajesh Kumar Tripathy Hyderabad, India
- Multi-Stage CNN Network for detection of Myocardial Infarction using VCG data.
- CNN-LSTM Network for Atrial Fibrillation.
- Few-Shot Learning for Sleep Pose Estimation using mm-Wave Bio-RADAR.

BITS Pilani *Jan 2020 - Dec 2020*
Research Assistant, FAWND Group Hyderabad, India
- Supervised by Prof. Parikshit Sahatiya for ML applications on flexible and wearable electronics.
- 1-D CNN based breath classification from flexible sensor data.
- Texture discrimination via Tactile Sensing.

WORK EXPERIENCE

Matchday AI *Feb 2022 – June 2022*
Computer Vision Intern (Part-Time) *India (Remote)*
- Analysis of badminton games using computer vision
- Monocular Object Tracking for player filtering
- Shuttle tracking and contact point detection.

UVRobots *July 2019 – Jan 2021*
Robotics Engineering Intern (Part Time) *London (Remote)*
- Developed autonomous mobile robots for restaurant deliveries and later for UV Disinfection
- Custom Web-UI for Visualization using ROS, JavaScript
- Custom ROS Navigation Stack with NFC based docking

- Object Detection via Tiny-ML

Indian Meteorological Department *May 2020 - August 2020*
Summer Intern (For university credit requirements) *Pune, India*
- Computer-Vision for visibility estimation in airports
- Used GANs for image-dehazing and fog image synthesis

HyperLoop India *July 2019 - July 2021*
Electronics Subsystem Team Lead *Hyderabad, India*
- One of the only 2 student teams ever from India to make it to the Hyperloop Competition Finals
- Led Electronics Team to develop a custom onboard electrical and electronics architecture
- Worked independently on a hybrid EKF-RNN based approach for Pod pose-estimation
- Introducing the possibility of Li-Fi communication b/w Pod and Ground-Station

RESEARCH - https://scholar.google.com/citations?user=rmvlyAgAAAAJ&hl=en

Publications

- Nikhil Keetha*, Avneesh Mishra*, **Jay Karhade***, Krishna Murthy Jatavallabhulah, Sebastian Scherer, Madhava Krishna, Sourav Garg, "*AnyLoc:Towards Universal Place Recognition*", ***IEEE-RAL (Under Review),****2023.*

- ***Jay Karhade****, Haiyue Zhu*, Ka-Shing Chung*, Rajesh Tripathy, Wei Lin, Marcelo Ang "Multi-Frequency-Aware Patch Adversarial Learning for Neural Point Cloud Rendering,2022.*

- Tejas Radhakrishnan*, **Jay Karhade***, SK Ghosh, PR Muduli, RK Tripathy and U. Rajendra Acharya, "AFCNNet: *Automated detection of AF using Chirplet transform and Deep Convolutional Bidirectional Long-Short Term Memory Network with ECG signals",* ***Computers in Biology and Medicine,****2021*

- **Jay Karhade**, Shaswati Dash, Samit Kumar Ghosh, Dinesh Kumar Dash, and Rajesh Kumar Tripathy, *Time-Frequency Domain Deep Transfer Learning Framework for the Detection of Heart Valve Diseases using PCG Signals,* ***IEEE Transactions in Instrumentation,****2022*

- **Jay Karhade**, Samit Ghosh, Pranjali Gajbhiye, Rajesh Tripathy, U.Acharya, *"Multichannel Multiscale Two-stage Convolutional Neural Network for the Detection and Localization of Myocardial Infarction using Vectorcardiogram Signal",* ***Applied Sciences, MDPI ,****2021*

- Naveen Bokka*, **Jay Karhade***, and Parikshit Sahatiya, *"Deep Learning Enabled Classification of Real Time Respiration Signals Acquired by Water Soluble Janus MoSSe Quantum Dot based Flexible Sensor",* ***Journal of Materials Chemistry B,****2021.*

- *Nihal Singh,* ***Jay Karhade****, Ishika Bhattacharya, Prathamesh Saraf, Plava Kattamuri, Alivelu Manga Parimi, "On-board Electrical, Electronics and Pose Estimation System for Hyperloop Pod Design",* ***International Conference on Control, Automation and Robotics****, Singapore,2021.*

Short Papers

- ***Jay Karhade****, Sebastian Scherer, "*Robust Lidar Place Recognition with RoPE enhanced OverlapTransformer*", (Workshop Short Paper),* ***IROS,*** *2023.*

TEACHING EXPERIENCE

BITS Pilani, Hyderabad, India *Jan2021 - May 2021*
Teaching Assistant for the course BITS F446 - Pattern Recognition

REVIEWING EXPERIENCE

Field Robotics Journal - 2023
RSS-2023
Robotics and Automation Letters, IEEE - 2023
IEEE Access - 2022

RESEARCH AWARDS & GRANTS

- **Robotics Institute, UTS, Australia** *July 2021*
  Presentation award for implementation on 3-D Aortic Deformation Reconstruction

- **BITSAA April 2021** April *2021*
  BITSAA-IRU Travel Partial Scholarship, ICCAR, 2021

LEADERSHIP POSITIONS

- All India Rank - 55, National Defence Academy *June 2018*
- Chairperson, IEEE Student Branch April 2019 - June 2021
- Treasurer, I-Cell, CIIE Oct 2019 - June 2020
- Duathlon Captain *August 2020 - June 2021*

INTERESTS Badminton Long-Distance Running Lawn Tennis Piano Guitar