JAY KARHADE

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EDUCATION

Birla Institute of Technology and Sciences, Pilani *August 2018 - Present*
B.E. Electrical and Electronics Engineering *Overall CGPA: 8.67*
Minor in Robotics and Automation *Minor CGPA: 9.62*

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

RESEARCH EXPERIENCE

Advanced Robotics Centre, National University of Singapore *April 2021 - Present*
Visiting Undergraduate Researcher Singapore *Remote due to COVID*
- Advised by Prof. Marcelo Ang, thesis on AI for Vision based SLAM systems
- Robot Grasping and Point Cloud Rendering for Grasp-Object Detection (ongoing)
- GAN based Point Cloud Rendering and Novel View Synthesis (ongoing)

Edifice Lab, Arizona State University *May 2021 - July 2021*
Summer Research Intern *Remote due to COVID*
- Advised by Prof. Thomas Czerniawski on Multi-Agent SLAM and 3-D Reconstruction
- Point Cloud Compression using Graph Attention Convolutions and 3D-GANs

BITS Pilani *October 2020 – ongoing*
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 (ongoing)

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 (ongoing)

WORK EXPERIENCE

Clutch *Sept 2021 - Oct 2021*
Computer Vision Intern (Part-Time) *Copenhagen(Remote)*
- Analysis of badminton games using computer vision
- Monocular Object Tracking for player filtering
- Pose estimation and homography for accurate player positioning

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

TEACHING EXPERIENCE

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

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

Journal Publications

- 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*** *(https://www.sciencedirect.com/science/article/abs/pii/S0010482521005771)*

- **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*** *(https://www.mdpi.com/2076-3417/11/17/7920)*

- 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*** *(https://pubs.rsc.org/en/Content/ArticleLanding/2021/TB/D1TB01237A)*

- **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*** *(Under Review) **

Conference Publications

- *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. (https://arxiv.org/pdf/2012.09412.pdf)*

- Alaukik Joshi, Mihir Ojha, Kanishka Harwani, **Jay Karhade** and Dr. Alivelu Manga Parimi, *"Design and Analysis of Dynamics, Control and Simulation of Y-4 Quadrotor Structure for Hybrid Aerial Vehicle", "****IEEE International Conference for Emerging in Technology****", Belgaum, India,2020. (https://ieeexplore.ieee.org/document/9154033)*

RESEARCH AWARDS & GRANTS

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

- **BITSAA April 2021** April *2021*
  BITSAA-IRU Travel Partial Scholarship for presenting paper at 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