Kanishk Jain

mobile | email | linkedin | github | webpage

Education

International Institute of Information Technology — Hyderabad, India
MS by Research in CSE; ***GPA: 9.33/10*** — *Aug 2021 – Nov 2022*

International Institute of Information Technology — Hyderabad, India
B.Tech (Honors) in ECE; ***GPA: 6.73/10*** — *Aug 2013 – Jun 2017*

Research Interests

I am interested in the following research topics: learning from multiple data modalities, language understanding in autonomous systems during navigation, explainable deep learning, multi-object tracking, improving robustness to domain shifts and adversarial attacks, learning in low-data regimes, and ensemble learning.

Research Publications

Test-Time Amendment with a Coarse Classifier for Fine-Grained Classification
Kanishk Jain*, Shyamgopal Karthik, Vineet Gandhi* — *Under Review*

- A post-hoc correction approach for reducing mistake severity in neural networks by leveraging coarse-grained predictions at test-time to improve the performance of fine-grained classification.

Ground then Navigate: Language-guided Navigation in Dynamic Scenes
Kanishk Jain*, Varun Chhangani*, Amogh Tiwari, K Madhava Krishna, Vineet Gandhi* — *ICRA 2023*

- A novel visual-grounding based approach to language-guided navigation in dynamic outdoor environment.

Bringing Generalization to Deep Multi-View Pedestrian Detection
Jeet Vora, Swetanjal Dutta, ***Kanishk Jain****, Shyamgopal Karthik, Vineet Gandhi* — *WACV-W 2023*

- Designed a comprehensive evaluation framework along with a novel dataset to to assess the generalization capabilities of existing MVD methods.

Comprehensive Multi-Modal Interactions for Referring Image Segmentation
Kanishk Jain*, Vineet Gandhi* — *ACL Findings 2022*

- Proposed a novel architecture for Referring Image Segmentation which captures comprehensive interactions between visual and linguistic modalities in a synchronous manner with effective multi-hierarchy aggregation.

Grounding Linguistic Commands to Navigable Regions
Kanishk Jain*, Nivedita Rufus*, Unni Krishnan*, Vineet Gandhi, K Madhava Krishna* — *IROS 2021*

- Introduced the novel task of Referring Navigable Regions (RNR), i.e., grounding regions of interest on road for navigation based on the linguistic command.

Work Experience

Optra Sports
Co-Founder — *Dec 2022 – Present*

- Developed top-view player tracking toolkit for the game of cricket.
- Collaborating with Start Sports (a Disney sports broadcast company) and AE Live (a graphics company for sports broadcasting) for live deployment in future cricket tournaments.

CVIT, IIIT Hyderabad
Research Engineer — *Dec 2022 – Present*

- Working on the research problem of reducing mistake severity of neural networks for fine-grained classification .
- Mentoring masters students with research problem formulation for their graduate thesis.

CVIT, IIIT Hyderabad
Research Assistant — *Sep 2019 – Nov 2022*

- Worked under guidance of Dr. Vineet Gandhi on Visual Grounding and its application in different multi-modal problem setting.
- Collaborated with Dr. K. Madhava Krishna on Language-guided Navigation leading to a publication at IROS-2021

- Part of the super winner team of Qualcomm Innovation Fellowship (QIF) 2020.
- An analytics tool for CSGO games providing relevant insights into winning strategies.

Turvo

Software Engineer *Jul 2017 – Aug 2019*

- Integrated Xero Accounting Platform with Turvo platform using Pub-Sub messaging pattern for handling different accounting scenarios.
- Added capability of Batch Payment Processing to allow users to schedule and process multiple payments at once.
- OCR over Document Images using active learning based template detection for extracting information from unstructured documents.
- Implemented New Feature Notification Modal for users.

Selected Projects

Top-View Player Tracking: Player tracking solution in the Bird's Eye View, deployed live in 2022 Asia Cup.

Stereo SLAM: Generate 3D point clouds using stereo images and use 2D-3D correspondences to estimate motion/pose using iterative Perspective-from-n-Points (PnP) algorithm.

Pose Graph Optimization: Used Levenberg–Marquardt algorithm to optimize for robot's poses by applying Odometery and Loop Closure constraints for 1D & 2D SLAM.

Neural Nearest Neighbor Networks: Implemented the NeurIPS paper, "Neural Nearest Neighbor Networks" as part of course project.

Unity Game for Amblyopia *(Hons. Project)*: Developed a Unity Game for diagnosis of Amblyopia. The game is played using eye gaze movements captured using an eye tracker.

Text to Braille Converter: A learning tool for people with no vision. Converts a given text to braille and audio.

Neuro Rehab Systems: A rehabilitation tool which aims to aid recovery from a nervous system injury and minimize any functional alterations resulting from it.

Technical Strengths

Languages: Python, Java, C++, C#, Node JS, Javascript

Frameworks: PyTorch, Keras, Tensorflow, OpenCV, scikit-learn, scikit-image

Tools: CARLA, TensorRT, Open3D, Unity 3D, Matlab, Spring Boot, Maven, REST

Databases: MySQL, Mongo DB, ElasticSearch, Apache Solr, Redis

Relevant Courses

ML/AI Courses: Statistical Methods in AI, Computer Vision, Mobile Robotics, Topics in Optimization Methods, Topics in ML, Cognitive Science and AI

Core Science: Computer Programming, Operating Systems and Algorithms, Data Structures

Other Courses: Digital Image Processing, Digital Signal Processing, Linear Algebra, Probability and Random Processes, Discrete Mathematics

Achievements

Qualcomm Innovation Fellowship: Leaded the super winner team of Qualcomm Innovation Fellowship (QIF) 2020 India.

JEE Mains: Ranked in National Top 0.2% (amongst 1,200,000 candidates) in JEE Mains.

JEE Advanced: Secured 4539 rank in JEE Advanced among 150,000 candidates in JEE Advanced.

R&D Showcase: Presented the Amblyopia Game at college's annual R&D showcase.