

Aditya Kumar Jha

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EDUCATION

Indian Institute of Technology (IIT) Kharagpur, India
Major: B.Tech in Chemical Engineering

GPA: 7.85/10
2020 - 2024

PUBLICATIONS

Kushagra S., Dhruv Patel, Aditya Kumar Jha, et al. [1] UAV-based Visual Remote Sensing for Automated Building Inspection. Presented as a **spotlight paper** at the *Computer Vision for Civil and Infrastructure Engineering (CVCIE)* Workshop Proceedings in **European Conference on Computer Vision (ECCV), 2022**

WORK EXPERIENCE

ideaForge Technology Limited Bengaluru, India
R&D Perception Engineer Apr 2025 – Present

- Extended the perception stack with **multi-map capabilities** and loosely coupled GPS alignment across visual and thermal cameras, **improving navigation uptime by 25%** in on-ground test flights
- Improved SLAM reliability in **low-texture, high-motion flights** by introducing an **adaptive keyframe insertion** strategy

Tiger Analytics Chennai, India
Data Analyst July 2024 - Mar 2025

- Developing GenAI-based solution to automate IT Helpdesk operations, leveraging advanced LLMs for ticket resolution

Autonomous Ground Vehicle Research Group IIT Kharagpur
SLAM and Mechatronics Team Member May 2021 - May 2024

- Trained, tested and benchmarked **semantic segmentation models** like U-Net and DeepLabV3 on Cityscapes dataset
- Applied **Structure from Motion** and **TSDF Based 3D reconstruction algorithms** on RGB-D range images dataset

Networked Optimization, Diagnosis, and Estimation (NODE) Laboratory University of Alberta
MITACS Globalink Research Intern May 2023 - Aug 2023

- Employed state-of-the-art object detection and segmentation models for **visual-based human and indoor object detection**
- Implemented a real-time **odometry-based object tracking system** to enhance the accuracy of detected objects' positions

PROJECTS

UAV-based Assessment of Civil Structures IIIT Hyderabad
Under the guidance of Prof. Ravi Kiran S. and Prof. Harikumar K. May 2022 - July 2022

- Estimated **key structural parameters** like inter-building distances, floor count, building footprints, window and rooftop features from **visual remote sensing data** to support **seismic risk assessment**
- Designed **lightweight networks** and built a **software library integrating classical and deep learning-based perception algorithms** to segment **rooftop layouts and non-structural elements** from aerial imagery at **15m altitude**
- Achieved **99.06% accuracy** in estimating pounding effect by applying RANSAC-based conditional plane fitting to **sparse 3D point clouds**

Pluto Drone Swarm Challenge IIT Kanpur
Inter IIT Tech Meet 11.0 Dec 2022 - Feb 2023

- Deployed **Multi-Threaded communication module** using socket programming to allow concurrent read/write at 25Hz
- Devised **probabilistic tracking algorithm** with worst-case analysis and bounds for localization using connected components
- Deployed an **adaptive PID controller** and employed **carrot approach** for generalized tuning and better control of drone

Stereo Camera Localization Pipeline for Autonomous Car IIT Kharagpur
Under the guidance of Prof. Debashish Chakravarty Oct 2021 - Feb 2022

- Developed pipeline for Stereo-Camera Localisation in mapped environment using **prior-map mapping technique**
- Performed **non-linear optimisation** and **learning-based monocular depth estimation** for refinement of localisation of car
- Implemented **photometry based depth residual minimisation** between projected LiDAR data and Stereo Depth Mapping

High Speed Navigation for Autonomous Racing Philadelphia, USA
10th F1TENTH Autonomous Grand Prix at ICRA 2022 (Remote) Apr 2022 - May 2022

- Spearheaded a **LiDAR-based autonomous racing stack**, tuned to minimize lap times and handle tight corners reliably
- Integrated **reactive obstacle avoidance** with PID control, enabling stable autonomous laps on the Oschersleben track

ACHIEVEMENTS

High Impact Project	UVRSABI at IIIT-H R&D Showcase 2023 [1] (25/300+)	2023
UVRSABI Winner	Inaugurated by Dr. S Velmurugan (Chief Scientist, CRRI) for deployment in Telangana, India	2023
Podium Participant	Drone Swarm Challenge at Inter IIT Tech Meet 11.0	2023
Scholarship Participant	3rd of 40 teams in virtual time trials at F1TENTH Grand Prix, ICRA 2022	2022
Participant	Awarded MITACS Globalink Research Scholarship to conduct summer research at UAlberta	2023
	Indy Autonomous Challenge at Indiana, USA	2022

TECHNICAL SKILLS

Programming languages: C++/C, Python, Bash, MATLAB

ML/AI: PyTorch, TensorFlow, Scikit-learn, WandB

Libraries: OpenCV, Open3D, Ceres, NumPy, Pandas

Miscellaneous: Git, Docker, LaTeX, Shell, Linux, ROS

RELEVANT COURSEWORK

* indicates MOOC

Computer Science: Data Structures and Algorithms, Foundations of Cyber Physical Systems, Graphical Machine Learning

Artificial Intelligence: Neural Network and Deep Learning, Image Processing*, Machine Learning*, 3D Computer Vision*

Mathematics: Linear Algebra, Probability and Statistics*, Differential Calculus, Numerical and Complex Analysis

VOLUNTEERING AND TEACHING EXPERIENCE

Computer Vision Mentor

IEEE Winter Workshop

IIT Kharagpur

Mar 2022

- Mentored IEEE-certified Robotics Workshop conducted by Technology Robotics Society, with 160+ attendees
- Taught topics like edge and corner detection, contours, template matching, and graph-based algorithms

National Service Scheme

Volunteer

IIT Kharagpur

Dec 2020 - May 2022

- Took an active participation in various activities for the social welfare of the rural population around the campus