Mudit Jain

👨‍💻 Experienced researcher and engineer specializing in **Foundation and World-model training, End-to-End Autonomous Driving architectures, Adapter-based fine-tuning of Foundation models, classical and ML-based 3D computer vision, and SLAM systems.** Proven track record in leading research agendas aligned with strategic objectives, critically analyzing state-of-the-art literature, designing rigorous experimental frameworks, and building proof-of-concept products. Adept at developing impactful solutions specifically tailored to automotive and robotics domains.

💻 Skills

Programming : C++ [6+ years] , Python [6+ years]
Technical Knowledge Domains : Foundation Model/World Model training for CV (**mmpretrain, transformers**), Adapter Fine Tuning (**PEFT, Transformer**), 2D/3D Object Detection & Tracking using fusion models (**LIDAR + Camera)** for static and dynamic objects (**mmdet**), 3D Computer Vision, Machine Learning **[Pytorch]**, SLAM **[ORB-SLAM]**, Non-linear optimization **[Eigen, g2o, ceres, GTSAM] - Bundle Adjustment, Camera Calibration, Pose Graph Optimization**, **IMU Preintegration**, SIMD Programming **[CUDA]**, 3D reconstruction [**NeRFs, Gaussian Splatting**].

⏳ Experience

2021 - Present
Qualcomm, San Diego - *Senior Deep Learning Engineer - Multimodal AI*

- Develop next-generation **LiDAR and LiDAR-camera fusion based foundation/world models**, **integrated with LoRA adapters and vision-language models (VLMs).** These models will be designed to handle complex urban and highway scenarios and are scalable to petabyte-scale data regimes. (Core team)
- Engineered & trained a **state-of-the-art static 2D/3D object detection model** that achieved over 90% yield in automated annotations, significantly enhancing labeling efficiency and model performance and far exceeding everyone's expectations. (Technical Lead)
- Served as the technical lead, overseeing the development of a hardware/software co-design solution for classical/hybrid visual odometry in extended reality (XR/VR/AR) applications. The proposed HW/SW co-design reduces power usage while maintaining latency and accuracy. (Technical Lead)

2024 - Present
Google Summer of Code - *Developer & Mentor - 3D Reconstruction*

- Developed a pipeline **to convert unconstrained video sequences** into **efficient Gaussian splats**. Collaborated with OpenCV under the mentorship of OpenCV founder and president, Gary Bradski.

2019 - 2021
Drone Lab - UCSD, San Diego - *Graduate Student Researcher [Funded]*

- Designed, implemented & deployed an Attention-based CNN on **incoming data from 600 cameras** to solve the problem of **wildfire plume detection** for the **ALERTWildFire initiative**

2016 - 2019
NVIDIA, Bengaluru - *Embedded System Software Engineer*

- Served as the **lead** on designing, implementing and testing the **software pipeline of I2C Virtualization** as per the IS026262 functional safety standards for ARM based NVIDIA SoCs (Xavier/Parker).

⏳ Misc

- 5 patents and 2 Qualcomm distinguished innovation awards
- Reviewer for ITSC 2025, IEEE IV 2025, WACV 2025
- GSOC Mentor for 2025 for 3D reconstruction project
- Judge/Mentor for Qualcomm Innovation Fund