Email : omkarn1298@gmail.com
Github : github.com/OmkarNadkarni
LinkedIn : linkedin.com/in/omkarn1298
Phone : +(44) 07765646416

Omkar Nadkarni

SKILLS

- **Programming -** C++ (11, 14, 17), Python, CUDA
- **Computer Vision -** Object Detection and tracking, 3D reconstruction, Pose Estimation
- **CV Libraries -** TensorRT, CuDNN, Tensorflow, Pytorch, OpenCV
- **C++ Libraries -** Qt, Boost, Poco, STL
- **Performance optimization -** MultiThreading, IPC, Design Patterns

EXPERIENCE

Mark Roberts Motion Control, U.K
Software Engineer - Computer Vision *September 2021 - PRESENT*

Developing AI-driven automation solutions for real-time object tracking in sports and broadcasting

- Optimized real-time object detection by upgrading from Yolov4 to Yolov9, improving detection accuracy by ~20% and achieving double the fps by leveraging cuDNN and TensorRT for GPU acceleration.
- Designed and implemented algorithms to merge object detections from multiple calibrated cameras, enabling 3D object localization and tracking.
- Used projection math and camera calibration techniques to solve for object correspondence across views, leveraging triangulation to estimate distances and spatial positions.
- Implemented detection and tracking algorithms in C++ for racing tracks to facilitate automation of robotic heads for broadcast and adjudication purposes.
- Developed UI applications using Qt Creator, integrating visualization tools for tracking systems and enhancing user interaction for broadcast automation.
- Implemented Interprocess Communication (IPC) to transfer images and detections between applications, increasing concurrent stream processing from 4 to 10.

Ottonomy IO, India
Autonomous Robotics and AI intern *May 2021 - July 2021*

Developing Navigation system for autonomous delivery robot navigation

- Conducted a performance comparison of various object detection models (e.g., EfficientDet, YOLO) for road sign detection and recognition using publicly available datasets, utilizing Python and PyTorch to optimize model accuracy.
- Implemented EfficientDet model using tensorRT in Python for deploying on Nvidia Jetson boards thus reducing latency by 86% and achieving real-time performance.

- Implemented road segmentation, enabling the autonomous system to differentiate between sidewalks and roads for safer navigation.

EDUCATION

Queen Mary University of London, London, United Kingdom
MSc Artificial Intelligence (Grade: Distinction) September 2019 - September 2020

Relevant modules: Advanced Robotic Systems, Deep learning and Computer Vision, Neural networks and NLP, Data Science.

Dhempe College of Arts and Science, Goa, India
BSc Computer Science (Grade: Distinction) September 2016 - September 2019

Relevant modules: Android Development, computer networks and security, Web Development.

PROJECTS

Drone Detection and Tracking System
(MSc project)

- Developed a real-time drone detection system using YOLOv4 in Python, ensuring high-speed inference for surveillance applications.
- Improved location invariance by implementing mosaic data augmentation and color transformations, enhancing model robustness.
- Reduced false positives from birds and lamp posts by expanding the training dataset with diverse background objects.
- Achieved a significant improvement in detection accuracy, optimizing for real-world deployment in sensitive areas.