Sandeep Kota

Machine Learning | Computer Vision | Robotics

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EXPERIENCE

Computer Vision Engineer Oct '21 — May '24
Continental Automotive Auburn Hills, United States

- Stellantis Project:
  - Improved trailer tracking performance for Trailer Reverse Assist feature on 2023 Dodge/RAM trucks.
  - Implemented kalman-filter based ROI adjustment algorithm for tracking 5W/goosneck trailers.
  - Research and prototyping of DL based trailer angle estimation for next generation of the product.
  - ***Skills:*** *C++, Geometric Computer Vision, Python, Pytorch, git, Automotive Standards (ASPICE, ISO26262, etc)*
- Aurora L4 Project:
  - Developed DL based trailer pose estimation architecture for fallback path planning on Aurora autonomous trucks.
  - Streamlined data pipeline with the Chain of Effects team reducing downtime on data collection campaigns.
  - ***Skills:*** *Python, Pytorch, Linux, Docker*

Robotics Engineer May '21 — Oct '21
InfoVision Inc. Dallas, United States

- Hardware and Software bringup of autonomous drones for warehouse inventory management application.
- Implemented visual inertial odometry, obstacle avoidance in OpenCV and controls using ROS and PX4 autopilot.
- ***Skills:*** *Python, C++, OpenCV, ROS, Gazebo, PX4, git, Yocto linux*

Robotics Engineer Oct '18 — May '19
Flux Auto (Autonomous Trucks for India) Bengaluru, India

- Developed a lighter U-Net based lane detection algorithm improving accuracy by 8%, with reduced params.
- Designed and implemented data collection pipeline with realtime fleet tracking in ROS using rosbag.
- Developed an online calibration procedure for accurate intrinsics and extrinsics for the data collection fleet.
- ***Skills:*** *Python, C++, Keras, ROS, Raspberry Pi*

Research Intern Dec '17 — Jun '18
Harvard Medical School - Shafiee Lab Cambridge, United States

- Co-authored research articles published in reputed journals on the applications of deep learning in healthcare.
- ***Skills:*** *Tensorflow, SolidWorks, 3D Printing*

PROJECTS

Agile Robotics for Industrial Automation Competition (ARIAC) Link

- Simulated order handling task in a large manufacturing warehouse environment using ROS and modern C++.
- Developed a robust control system for a gantry robot with two UR-10 arms to tackle several agility challenges. Agility challenges include sensor blackout, picking from conveyor belt, faulty gripper, removing faulty parts, processing priority shipments, dynamic obstacle avoidance.
- ***Skills:*** *C++, ROS, gazebo, git*

SKILLS

Programming Languages C++, Python
Robotics ROS (Robot Operating System), Gazebo, Reinforcement Learning, Robot Kinematics and dynamics
Machine Learning Pytorch, Tensorflow, Pattern Recognition, Clustering, Regression, CNN, Transformers, NLP
Computer Vision Multi-View, Object detection and tracking, Segmentation, Depth Estimation, OpenCV
Software Tools Gazebo, RViz, Foxglove, Docker, Git, Jenkins

EDUCATION

Master of Engineering in Robotics, University of Maryland College Park College Park, MD, United States

- Software Development for Robotics, Statistical Pattern Recognition, Path Planning, and Advanced Computer Vision.

Bachelor of Technology in Mechatronics, SASTRA University Thanjavur, India Thanjavur, TN, India

- Robotics, Robot Modelling, Control Systems

PUBLICATIONS

Development and evaluation of inexpensive automated deep learning-based imaging systems for embryology

An inexpensive smartphone-based device for point-of-care ovulation testing Authors

Human sperm morphology analysis using smartphone microscopy and deep learning