Keith Rodrigues

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PROFESSIONAL SUMMARY

Over 4 years of experience in developing cutting-edge computer vision algorithms for advanced driver assistance systems (ADAS). Proficient in software development, image analysis, pattern recognition, and deploying on-device deep learning solutions. Demonstrated expertise in solving complex image processing challenges and contributed to innovative, high-impact projects. Eager to leverage my skills to drive innovation in automation and intelligent systems.

SKILLS

- Machine Learning
- Computer Vision
- OpenCV, scikit-learn
- ROS/ROS2

- PyTorch, Tensorflow, Caffe, ONNX
- Python, C++
- Linux, Windows
- GIT, Docker

- MATLAB
- Adaptability
- Team work
- Problem solving

WORK EXPERIENCE

Data Scientist   Apr 2023 – Aug 2023
Visteon Corporation   Goa, India

Vehicle Surround View Monitor System
- Led the high-precision calibration of the surround view system in the test vehicle.
- Successfully developed seamless bird's eye and 3D views using fisheye cameras and replaced alpha blending with multiband blending to enhance visual quality.
- Designed a method using equirectangular projections to provide undistorted front and rear corner views of the vehicle.
- Enhanced on-device system performance by optimizing the OpenGL-based rendering pipeline, resulting in reduced latency and improved responsiveness.
- Executed simulation-based testing to identify corner cases and determine optimal camera configurations.
- Familiar with common camera models, calibration, and image enhancement techniques.
- Automated intrinsic and extrinsic camera calibration using Python and OpenCV, streamlining the calibration process for efficiency.

Embedded Software Engineer   Jul 2021 – Mar 2023
Visteon Corporation   Goa, India

Visteon's level 2/2+ ADAS features
- Liaised with teams from Texas Instruments and Samsung to import and evaluate deep learning vision models on their SoCs. Reported and helped resolve 20+ issues with their import and inference tools.
- Analyzed and pruned models in ONNX format.

- Developed C++ based applications in ROS2 for end-to-end real-time deployment of the quantized models on embedded hardware.
- Formulated a probabilistic occupancy grid for vehicle path planning using semantic segmentation.
- Assisted the validation and perception teams through SIL and HIL testing, actively resolving defects.
- Facilitated seamless software integration for customer demos, consistently delivering ahead of schedule.
- Conducted peer reviews for code changes, ensuring compliance with MISRA guidelines to maintain code quality.

Software Engineer   Jul 2018 – Jun 2021
Visteon Corporation   Goa, India
- Developed and fine-tuned convolutional neural networks (CNNs) for traffic sign and light recognition, lane detection, and object detection (using SSD and YOLO frameworks), achieving real-time performance.
- Benchmarked model performance against state-of-the-art algorithms, conducting an in-depth literature review to drive model optimization.
- Created custom object detection and classification datasets for a vehicle occupant monitoring system, enabling the detection of passenger count and driver emotions.
- Utilized annotation tools (CVAT, LabelMe) to label large datasets and applied advanced data augmentation techniques to improve the detection accuracy by over 10% in challenging scenarios.
- Effectively managed large-scale datasets for computer vision applications, ensuring high data quality and reliability.
- Collaborated in an Agile environment to analyze requirements and log defects.

EDUCATION

Master of Science in Robotics   Sep 2023 – Sep 2024
The University of Sheffield   Sheffield, UK
Relevant modules: Deep learning, Machine vision, Mobile robotics and autonomous systems.

Bachelor of Engineering in Electrical and Electronics   Jul 2014 – May 2018
Goa University   Goa, India
GPA: 8.01/10
✓ Recipient of the Fomento Resources Gold Medal Award for being the top performer.

PROJECTS

Explainable deep learning for brain tumor diagnosis | Brain tumor classification from MRI images with convolutional neural networks and explainability using class activation mapping techniques.
PyTorch • Image processing • Optimization

Mimic-arm | Two-segment planar robot manipulator mimicking human arm movements.
MediPipe Pose • Forward kinematics