Keith Rodrigues

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PROFESSIONAL SUMMARY

Highly skilled data scientist with over 4 years of experience in developing computer vision and deep learning algorithms for ADAS and surround view systems. Proficient in machine learning, computer vision, model optimization, and real-time deployment on embedded platforms. Adept at collaborating with cross-functional teams to deliver effective solutions and drive project success. Committed to leveraging expertise to foster innovation in automation and intelligent systems.

SKILLS

Technical skills | Machine learning • Computer vision • Robot kinematics • Edge AI
Programming | Python • C++ • MATLAB
Frameworks and libraries | PyTorch • Keras • Caffe • ONNX • OpenCV • ROS/ROS2
Miscellaneous | Linux • Windows • Bash • Git • CAD
Soft skills | Team player • Adaptability • Problem solving

WORK EXPERIENCE

Data Scientist | Visteon Corporation | Apr 2023 – Aug 2023
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 | Visteon Corporation | Jul 2021 – Mar 2023
Lsevel 2/2+ ADAS features

- Liaised with teams from Texas Instruments and Samsung to import, evaluate, and deploy deep learning vision models for real-world automotive ADAS systems. Reported and helped resolve 20+ issues with their import and inference tools.
- Utilized APIs to interface embedded hardware with C++ applications in ROS2, enabling end-to-end deployment of quantized models. Applied basic model deployment concepts and tools, ensuring smooth transition from development to deployment.

- Analyzed and pruned models in ONNX format.
- Collaborated on the implementation of research ideas from newly published papers, ensuring state-of-the-art solutions were adopted to enhance model performance.
- 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 of code changes, adhering to industry best practices and MISRA coding standards.

Software Engineer | Visteon Corporation | Jul 2018 – Jun 2021

- 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 leading industry solutions and continually refined models to maintain competitive performance.
- Created custom object detection and classification datasets for 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.
- Leveraged Python and various libraries (e.g., NumPy, Scikit-Image, PIL, OpenCV) to manipulate, process, and analyze large datasets, enhancing model training and evaluation processes.
- Collaborated within an Agile environment, working closely with cross-functional teams to define requirements, track defects, and optimize product performance.

EDUCATION

MSc Robotics
The University of Sheffield | Sep 2023 – Sep 2024 | Sheffield, UK
Relevant modules | Deep learning, Machine vision, Mobile robotics and autonomous systems.

BEng Electrical and Electronics
Goa University | Jul 2014 – May 2018 | 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 • Kaggle dataset

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