Quinn Meyer

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EXPERIENCE

Data Scientist – Camera Systems and Operations **2018 - Present**
Aptiv, Troy, Michigan
Merging Math & Machine Learning for Automotive Manufacturing Applications

- Used unsupervised learning (**K-Means Clustering, MATLAB**) to create new testing process that identified cameras likely to fail temperature trials, reduced product engineering design cycle by 2-4+ weeks.
- Developed object detection algorithm (**Python, Tensorflow, Neural Network, OpenCV**) to automate detection of optical targets during testing, reduced data post-processing and manual work time by 95%.
- Created new way to quantify image sensor performance, leveraged Fourier Signal Processing to determine focus score (**Python, Pandas, Numpy**), used to reduce camera failure investigation time by 2-4 weeks.

End-to-End Software Development to Support Testing & Operations

- Collaborated with cross-functional teams to define metrics and measure camera performance, analyzed competitor landscape (**Pandas**) to set establish acceptance criteria and offer competitive products.
- Created end-to-end software package (**MATLAB**) for deployment in manufacturing process to automate testing and data collection, ensured cameras met specification on metrics such as Focus Score, etc.
- Analyzed test & manufacturing data (**Python, MATLAB**) to validate new camera testing methods that used less space on the factory floor, reduced cost of testing by 92%.
- Designed and deployed custom objective function optimization algorithm (**MATLAB**) to calibrate camera alignment on custom testing rig, reduced annual hardware and maintenance costs by $300K+.
- Built data pipelines and storage methodology to ingest and clean (**Python**) testing and calibration data.
- Acted as project manager and liaison with customers, gathered requirements, translated business needs into technical requirements, and gave presentations to technical / non-technical stakeholders / customers.
- Developed integration with 3rd party software (**Python, Solidworks**) to automatically design structural hardware, ensuring product met vision requirements, reduced development program delay by 4+ weeks.

PROJECTS

High Accuracy Geometric Calibration Software in Python (LINK)

As an engineer working in the camera industry, I have grown an appreciation for the mathematics behind the analysis and configuration of cameras. Here, I use computer vision techniques to geometrically calibrate cameras comparable in accuracy to industry standard solutions such as Imatest and Axios 3D.

- Devised novel checkerboard corner detection algorithm requiring no inputs able to detect corners down to a size of ten pixels – completely outperforming open-source alternatives, such as OpenCV, by all metrics.
- Constructed novel intrinsic calibration algorithm to geometrically calibrate fisheye cameras with mean reprojection error of less than 0.4 pixels and average 20-meter triangulation error of less than 0.15%.
- Developing visualizations, analytics, and performance metrics as well as researching optimization methods and intrinsic calibration models to make high-accuracy intrinsic calibration more accessible to the world.

EDUCATION

Western Governor's University, Salt Lake City, UT **Dec 2022**
Master of Science – Data Analytics, GPA: 4.0 / 4.0
Relevant Coursework: Data Mining, Predictive Modeling, Exploratory Data Analysis, Data Acquisition

Purdue University, West Lafayette, IN **May 2018**
Bachelor of Science – Mechanical Engineering, GPA: 3.6 / 4.0

SKILLS & CERTIFICATIONS

Programming: Python (Pandas, SkLearn, Tensorflow, Numpy, Keras, Pillow), R, SQL, MATLAB, HTML
Software: Tableau, Git, Microsoft Word, Excel, Powerpoint, Jira, ETL
Others: Machine Learning, Deep Learning, Computer Vision (OpenCV), Signal Processing