

Tom Reader

Computer Vision and Machine Learning Consultant

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Education

BSc Computer Science, Coventry University

- 2:1 (Honours)
- Specialised in AI / Machine Learning
- Final year project focused on Neural Networks and Genetic Algorithms

Recent Experience

Consulting on a number of projects, mostly long-term, including:

LiveLink Aerospace - Aerospace Engineer - ongoing, since 2016

- Developed various computer vision solutions for an on-board drone guidance system
- Worked with other members of the guidance system team to develop, assess, integrate and test a number of solutions
- This resulted in a very successful system being developed
- I am named on a patent for my development of part of this system

Retail hardware supplier (details commercially sensitive) - ongoing, since 2023

- Developed computer vision system for classifying items purchased by customers
- Achieved higher accuracy than existing commercial system, and at much higher speed
- Also performed platform-specific development (e.g. portation to high speed processor), and integration to the rest of their product
- Product now rolling out across stores

MachineEye Technology - Computer Vision Consultant - ongoing, since 2020

- Developed and rolled out a safety-compliance assessment system, detecting people in 'danger areas' in industrial environments, and other safety factors
- Assessed and selected hardware, chose software models, used deep learning techniques to build custom models for specific requirements
- Worked alongside other members of the team to roll out the product to a number of customers

Rumex / Taylor Technologies - since 2020

- Lead software developer on a chemical spot-spraying system to control spray of weed-killers on commercial farms, saving around 77% of chemical costs
- Developed deep-neural-network based system that could identify target weeds (docks) very accurately, ensuring valuable plants (clover and grass) are untouched

Work on various other contracts

- Electron microscope image analysis software, microchip / MEMS fabrication quality control analysis software, cosmetics analysis tool, astronomical image processing

Technologies and Expertise

- 'Traditional' computer vision, using libraries such as OpenCV
- Modern computer vision methods, including:
 - Classifiers such as ResNet
 - Detectors such as MobileNet-SSD, Yolo
 - Recent experience of training and deploying deep learning models on 'edge' hardware with very tight run-time constraints
- Machine learning:
 - Neural Networks, Deep Learning, including PyTorch, TensorFlow
 - Genetic algorithms
 - Pre-processing, e.g. data augmentation techniques
 - Training and run-time inference frameworks
- Hardware platforms such as the Jetson range (NX, Orin) and RockChip, as well as Raspberry Pi, OrangePi,
- 30+ years' experience in general programming and software development: C++ and Python, Linux, database, data communications

Work Environment

- I work mostly from home (south coast of England), although occasional on-site meetings by arrangement are always possible
- My work environment is secure: I have current Cyber Essentials certification, and take client confidentiality very seriously

Hobbies / Interests / Volunteering

- Active member of local running club, also keen cyclist
- Occasional volunteer at parkrun and other events
- Training member of SERV Wessex (the "Blood Bikers") as a volunteer driver
- Recently passed Advanced Driving Test (achieved RoSPA "Gold" standard), been asked to train as a tutor to help future pupils - in progress
- Current DBS held with various organisations