Hayden Gunraj

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Skills

- Languages – Python, MATLAB, C++, C
- Libraries – PyTorch, TensorFlow, OpenCV, Keras, scikit-learn, scikit-image
- Concepts – Deep Learning, Computer Vision, Image Analysis, Machine Learning

Experience

Deep Learning Developer DarwinAI Jan. 2020 – present

- Developed and trained deep neural networks for research and industry applications
- Optimized models using a proprietary tool for fast inference on the edge

Deep Learning & Comp. Vision Eng. Intern Synapse Technology Corp. May 2019 – Aug. 2019

- Designed an object-level image retrieval pipeline to leverage large sets of unlabelled data
- Developed methods for fast image comparison using latent representations from deep triplet networks
- Used TensorFlow to train convolutional neural networks for automated threat detection in X-ray images
- Deployed the first ever model for automatic cigarette lighter detection at an international airport

Research Assistant Vision & Image Processing Research Group, UWaterloo Jan. 2019 – April 2019

- Leveraged scikit-learn to train traditional learning algorithms for prostate cancer detection in MR images
- Implemented image feature extraction and data augmentation pipelines based on state-of-the-art methods
- Trained convolutional neural networks for segmentation using Keras, achieving a Dice score of 0.90

Industrial Imaging Software Developer P&P Optica Sept. 2018 – Dec. 2018

- Created Python tools for calibration and operation of a hyperspectral imaging system
- Trained and tested support vector machines for material classification and composition analysis
- Developed image analysis algorithms to automate data post-processing and quantify classifier performance

Medical Software Developer Sunnybrook Research Institute Jan. 2018 – April 2018

- Developed novel segmentation and analysis algorithms for cardiovascular MR images using MATLAB
- Integrated new algorithms into a fully automated analysis pipeline which reduces manual work for clinicians
- Achieved a correlation coefficient of 0.85 when automatic results were compared to expert results

Projects

PyTorch Training Tools Dec. 2019

- Created a set of reusable modules for training deep neural networks with PyTorch
- Trained classification models on Places365, Google Landmarks, and lung cancer nodule datasets
- Added functionality for training triplet networks for image embedding and classification

Education

University of Waterloo BASc Candidate, Mechatronics Engineering Sept. 2016 – Present

- Relevant Courses – Algorithms and Data Structures (C++), Computer Structures and Real-time Systems (C)
- University of Waterloo Dragon Boat Club (2018)