SHASHANK **TRIPATHI**

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EDUCATION

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
Master's in Computer Vision (MSCV) — Dec 2018
- Cumulative GPA: 4.11/4
- Relevant Courses: Introduction to Machine Learning, Computer Vision, Visual Learning and Recognition, Deep Reinforcement Learning and Control, Geometry-based Methods in Vision

Birla Institute of Technology and Science (BITS), Pilani — Hyderabad, India
Bachelor of Engineering, Electronics and Communication Engineering — July 2016
- Cumulative GPA: 9.16/10 (top 2% among 1500 students, Merit scholarship recipient)

TECHNICAL SKILLS

Programming: Python, C++, C, MATLAB, Linux Shell/Kernel, R
Tools: TensorFlow, Pytorch, OpenCV, Keras, Caffe, Theano, Git, Perforce

RESEARCH EXPERIENCE

Amazon Lab126, Sunnyvale – Applied Scientist Intern — May 2018 – Aug 2018
Computer Vision and Machine Learning (CVML) Team
- Developed new algorithms for training with synthetic data to improve object detection and localization capabilities in Alexa, Echo and camera devices – efforts led to ~4% mAP improvement over state-of-the-art

Amazon Lab126 – Capstone (Co-op) Intern — Dec 2017 – Dec 2018
Neural Network/ Model Compression
Supervisor: Dr. Kris Kitani, Associate Research Professor, Robotics Institute (CMU)
- Exploited class-wise parameter redundancy and activation map sparsity to get faster inference during test time – model trained with our algorithm achieved similar performance with 16% inference time reduction

University of Montreal – Machine Learning Research Intern — Feb 2016 – Jul 2016
Deep Spectral-based Shape Features for Alzheimer's Disease Classification[2][3]
Supervisor: Dr. Samuel Kadoury, Associate Professor and Canada Research Chair
- Proposed a combination of grey-matter voxel-based intensity variations and 3D structural (shape) features for classification of Alzheimer's disease patients using MRI brain scans
- Results presented near state-of-the-art accuracies (>89%) especially for the more challenging discrimination tasks (Outperformed conventional MRI shape-based strategies by 22%-27%)

Central Electronics Engineering Research Institute, Pilani, India – Computer Vision Intern — May 2014 – Dec 2014
C2F: Coarse-to-Fine Vision Control System for Automated Microassembly[1]
Supervisor: Dr. H D Sharma, Scientist, Micro and Nano Assembly and Characterisation Lab
- Developed a completely automated, visual-servoing based closed loop system to perform 3D micromanipulation and microassembly tasks; Solved challenges around object recognition/tracking, scene understanding, path planning and obstacle avoidance
- Results led to a ~75% reduction in setup and run time as compared to manual operation, while mitigating any risk of collision during grasp-and-drop experiments

ACADEMIC PROJECTS

Learning Scene Saliency Maps Using Superpixel-augmented Convolutional Neural Networks — Aug 2017 – Dec 2017
- Extracted SLIC superpixel segmentations in input images and defined a range and color separation vector as input to a Siamese Convolutional Neural Network (CNN)
- Trained the network on the ECSSD saliency dataset in PyTorch. Superpixels allow for significant speedup (4x) in training while capturing a larger spatial context, leading to more precise saliency maps

PUBLICATIONS

[1] Nanotechnology and Nanoscience-Asia, 2018 <link>
[2] IEEE-ISBI 2017: <link>
[3] MICCAI (SeSAMI), 2016: <link>

PROFESSIONAL EXPERIENCE

Aruba Networks – an HPE company, Bangalore, India — Sept 2016 – July 2017
Software Developer, Platform Team — Bangalore, India
Worked on Linux kernel development by supporting Aruba OS customizations on the most recent development branch for Aruba 7280 line of mobility controllers

Franklin Templeton Investments, Hyderabad, India — May 2015 – Aug 2015
Summer Intern | Project: Financial Modelling for Tactical Asset Allocation — Hyderabad, India
Built fair-value models for capturing statistical associations like lead-lag correlation and one directional causality which achieved a 12% improvement in hit-rate for forecasting yield-spreads (US-OAS)

Robotics Institute, Carnegie Mellon University — Pittsburgh, USA
Graduate Teaching Assistant – Computer Vision (16-385) — Jan 2018 – May 2018
Graduate Teaching Assistant – Graduate Computer Vision (16-720) — Aug 2018 – Dec 2018

LEADERSHIP

Secretary, Electrical and Electronics Association, BITS Pilani — Apr 2014- Apr 2015