Vishwanath Sindagi

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Summary

Current Role: Pursuing Ph.D in ECE dept. (computer vision and machine learning) at Johns Hopkins University.

Experience: Over 6 years of industry experience involving R&D of computer vision/computational photography.

Research Interests: Computer vision and machine learning with a specific focus on small object detection, face detection, crowd analytics, domain adaptation, low-level vision and applications of generative modeling.

Education

2018–Now **Johns Hopkins University**.
Ph.D in Electrical and Computer Engineering (transferred from Rutgers)
Advisor: Prof. Vishal M. Patel

2016–2018 **Rutgers University**.
Ph.D in Electrical and Computer Engineering
Advisor: Prof. Vishal M. Patel

2007–2009 **International Institute of Information Technology Bangalore (IIIT-B)**.
M Tech in Information Technology

Experience

Sept 2018- -Now **Johns Hopkins Unviersity**, *Baltimore, MD (Graduate Research Assistant)*.
Research on computer vision and machine learning with a specific focus on deep learning and object detction,image-based crowd analytics, domain adaptation, applications of generative modeling (GANs) and low-level vision.

Jun 2018- -Aug 2018 **Apple Inc**, *Santa Clara, California (AI Research Intern)*.
Research on multi-modal object detection.

Aug 2016- -May 2018 **Rutgers Unviersity**, *Piscataway, NJ (Graduate Research Assistant)*.
Research on computer vision and machine learning with a specific focus on deep learning and small object detction, face detection in the crowd, cnn-based crowd analytics, applications of generative modeling (GANs) and low-level vision.

Dec 2012- -July 2016 **Samsung R&D Institute Bangalore (SRIB)**, *Bangalore, India (Chief Engineer)*.
Development of products related to computational photography, video analytics, machine vision and gpu computing.

Jul 2009- -Nov 2012 **AllGoVIsion**, *Bangalore, India (Sr. Software Engineer)*.
Development of products related to video analytics, video surveillance and object detection.

Publications & Patents

Conference **V.A. Sindagi**, Y Zhou and V.M. Patel, "MVX-Net: Multimodal VoxelNet for 3D Object Detection". *IEEE International Conference on Robotics and Automation (**ICRA**) 2019.*

V.A. Sindagi and V.M. Patel, "DAFE-FD: Density Aware Feature Enrichment for Face Detection". *IEEE Winter Conference on Applications of Computer Vision (**WACV**) 2019.*

He Zhang, **V.A. Sindagi** and V.M. Patel, "Multi-scale Single Image Dehazing using Perceptual Pyramid Deep Network". *IEEE Conference on Computer Vision and Pattern Recognition Workshops (**CVPRW**) 2018.*

C Ancuti *et al.* "Ntire 2018 challenge on image dehazing: Methods and results". *IEEE Conference on Computer Vision and Pattern Recognition Workshops (**CVPRW**) 2018.*

H Nada, **V.A. Sindagi**, He Zhang and V.M. Patel, "Pushing the Limits of Unconstrained Face Detection: a Challenge Dataset and Baseline Results ". *IEEE International Conference on Biometrics: Theory, Applications, and Systems (**BTAS**) 2018.*

X Di, **V.A. Sindagi** and V.M. Patel, "GP-GAN: Gender Preserving GAN for Synthesizing Faces from Landmarks". *IEEE International Conference on Pattern Recognition (**ICPR**) 2018 **[Best paper award]**.*

L Wang, **V.A. Sindagi**, and V.M. Patel, "High-Quality Facial Photo-Sketch Synthesis Using Multi-Adversarial Network". *IEEE International Conference on Automatic Face and Gesture Recognition (**FG**) 2018.*

V.A. Sindagi and V.M. Patel, "Generating High-Quality Crowd Density Maps using Contextual Pyramid CNNs". *IEEE International Conference on Computer Vision (**ICCV**) 2017.*

V.A. Sindagi and V.M. Patel, "CNN-based Cascaded Multi-task Learning of High-level Prior and Density Estimation for Crowd Counting". *IEEE International Conference on Advanced Video and Signal-based Surveillance (**AVSS**) 2017 **[Best paper award]**.*

V.A. Sindagi and S. Srivastava, "OLED Panel Defect Detection Using Local Inlier-Outlier Ratios and Modified LBP". *IAPR International Conference on Machine Vision Applications (**MVA**) 2015 .*

Journal

H. Zhang, **V.A. Sindagi** and V.M. Patel, "Joint Transmission Map Estimation and Dehazing using Deep Networks". *IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), accepted for publication, 2019.*

V.A. Sindagi and V.M. Patel, "A Survey of Recent Advances in CNN-based Single Image Crowd Counting and Density Estimation". *Pattern Recognition Letters (**PRL**), 2018.*

V.A. Sindagi and S. Srivastava, "Domain Adaptation for Automatic OLED Panel Defect Detection Using Adaptive Support Vector Data Description". *International Journal of Computer Vision (**IJCV**), 2017.*

Pre-prints

V.A. Sindagi and V.M. Patel, "HA-CCN: Hierarchical Attention-based Crowd Counting Network". *Under review 2019.*

H. Zhang, **V.A. Sindagi** and V.M. Patel, "Image De-raining Using a Conditional Generative Adversarial Network". *Under review 2019.*

Patents

"Method and system for enhancing human skin in media". *Submitted to Indian Patent Office (ref no: 2424/CHE/2015).*

"Method and apparatus to count predefined objects using video analysis". *Submitted to Indian Patent Office (ref no: 4381/CHE/2011).*

Industry Experience (Project profile)

Samsung R&D

- Automatic fast event detection for slow video playback.
- Intelligent scene framing for camera application using salient object detection.
- Low light photography: Image enhancement method via blur and noisy image fusion.
- Machine vision: OLED panel defect detection using hand engineered features and SVM.
- Image set summarization using Bag of Visual Words (BoVW) and k-means clustering.
- Object tracking using TLD (Tracking, Learning and Detection), MIL (Multiple Instance Learning) and CMT (Consensus based Matching and Tracking of objects).
- Scene recognition using Bag of Visual Words (BoVW) and spatial pyramid kernel.
- GPU optimization of video surveillance algorithms (background subtraction using NPMD and mixture of gaussians, video stabilization using optical flow, RANSAC homography).

AllGoVision

- Coffee cup detection and counting using HOG features and SVM for a retail giant (patent application submitted).
- Video/image stitching using SURF features and RANSAC homography.
- Behavioral analytics: detection of loitering, wrong-way, illegal parking, camera tampering and left baggage.
- Background subtraction using mixture of Gaussians and its adaption to large changes in illumination.
- Parts based object tracking using mean-shift algorithm.

Technical strengths

Research Interests

small object detection, face detection, deep generative modeling, CNN-based crowd analytics, visual recognition, domain adaptation.

Programming Languages	C, C++, CUDA, Lua, Matlab, Python, R
Deep Learning Frameworks	Torch, PyTorch, Caffe