Vishwanath Sindagi

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Summary

Current Role	Pursuing Ph.D in ECE dept. (computer vision and machine learning) at Rutgers 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

2016–Now   **Rutgers University**.
Ph.D in Electrical and Computer Engineering (Current GPA: 4.0/4.0)
Advisor: Prof. Vishal M. Patel

2007–2009   **International Institute of Information Technology Bangalore (IIIT-B)**.
M Tech in Information Technology (GPA: 3.42/4.0)

Experience

Aug 2016- -Now   **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 2015   **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** 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   **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**), accepted for publication, July 2017*.
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, "CNN-based Weakly Supervised Learning and Selective Fine-tuning for Single Image Crowd Counting". *Under review 2017*.
L. Wang, **V.A. Sindagi** and V.M. Patel, "High-Quality Facial Photo-Sketch Synthesis Using Multi-Adversarial Networks". *Under review 2017*.
X. Di, **V.A. Sindagi** and V.M. Patel, "GP-GAN: Gender Preserving GAN for Synthesizing Faces from Landmarks". *Under review 2017*.
H. Zhang, **V.A. Sindagi** and V.M. Patel, "Joint Transmission Map Estimation and Dehazing using Deep Networks". *Under review 2017*.
H. Zhang, **V.A. Sindagi** and V.M. Patel, "Image De-raining Using a Conditional Generative Adversarial Network". *Under review 2017*.

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