

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 **Intl Institute of Information Technology Bangalore (IIIT-B).**
M Tech in Information Technology

Experience

- June 2020–**Facebook AI, Boston, MA (Research Intern).**
–Now Research on multi-modal computer vision.
- Sept 2018–**Johns Hopkins University, Baltimore, MD (Graduate Research Assistant).**
–Now Research on computer vision and machine learning with a specific focus on deep learning and object detection, image-based crowd analytics, domain adaptation, applications of generative modeling (GANs) and low-level vision.
- May 2019–**Apple Inc, Santa Clara, California (AI Research Intern).**
–Aug 2019 Research on Shape Estimation.
- Jun 2018–**Apple Inc, Santa Clara, California (AI Research Intern).**
–Aug 2018 Research on multi-modal object detection.
- Aug 2016–**Rutgers University, Piscataway, NJ (Graduate Research Assistant).**
–May 2018 Research on computer vision and machine learning with a specific focus on deep learning and small object detection, face detection in the crowd, cnn-based crowd analytics, applications of generative modeling (GANs) and low-level vision.
- Dec 2012–**Samsung R&D Institute Bangalore (SRIB), Bangalore, India (Chief Engineer).**
–July 2016 Development of products related to computational photography, video analytics, machine vision and gpu computing.
- Jul 2009–**AllGoVision, Bangalore, India (Sr. Software Engineer).**
–Nov 2012 Development of products related to video analytics, video surveillance and object detection.

Publications & Patents

- Conference** **V.A. Sindagi***, P Oza*, R Yasarla and V.M. Patel, "Prior-based Domain Adaptive Object Detection for Adverse Weather Conditions". *European Conference on Computer Vision (ECCV) 2020.*
- V.A. Sindagi**, R Yasarla, D S Babu, R. V. Babu and V.M. Patel, "Learning to Count in the Crowd from Limited Labeled Data". *European Conference on Computer Vision (ECCV) 2020.*
- V J M Jose and **V.A. Sindagi**, I Hacihaliloglu and V.M. Patel, "KiU-Net: Towards Accurate Segmentation of Biomedical Images using Over-complete Representations". *Intl Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2020.*
- R Yasarla* and **V.A. Sindagi*** and V.M. Patel, "Syn2Real Transfer Learning for Image Deraining using Gaussian Processes". *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020.*

- V.A. Sindagi**, R Yasarla and V.M. Patel, "Pushing the Frontiers of Unconstrained Crowd Counting: New Dataset and Benchmark Method". *IEEE Intl Conference on Computer Vision (ICCV)* 2019.
- V.A. Sindagi** and V.M. Patel, "Multi-Level Bottom-Top and Top-Bottom Feature Fusion for Crowd Counting". *IEEE Intl Conference on Computer Vision (ICCV)* 2019.
- V.A. Sindagi** and V.M. Patel, "Inverse Attention Guided Deep Crowd Counting Network". *IEEE Intl Conference on Advanced Video and Signal based Surveillance (AVSS)* 2019. **[Best Paper Award]**
- V.A. Sindagi**, Y Zhou and V.M. Patel, "MVX-Net: Multimodal VoxelNet for 3D Object Detection". *IEEE Intl 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 Intl 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 Intl 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 Intl 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 Intl 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 Intl 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 Intl Conference on Machine Vision Applications (MVA)* 2015 .
- Journal **V.A. Sindagi** and V.M. Patel, "HA-CCN: Hierarchical Attention-based Crowd Counting Network". *IEEE Transactions on Image Processing (TIP)* 2019.
- H. Zhang, **V.A. Sindagi** and V.M. Patel, "Image De-raining Using a Conditional Generative Adversarial Network". *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, accepted for publication, 2019.
- 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)* 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". *Intl Journal of Computer Vision (IJCV)*, 2017.
- Pre-prints **V.A. Sindagi**, R Yasarla and V.M. Patel, "JHU-CROWD++: Large-Scale Crowd Counting Dataset and A Benchmark Method". *Under review* 2020.
- Patents "Method and system for enhancing human skin in media". *Submitted to Indian Patent Office (2424/CHE/2015)*.
"Method and apparatus to count predefined objects using video analysis". *Submitted to Indian Patent Office (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
- Object 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.