Saksham Suri

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Education

University of Maryland, College Park — **Aug. 2019 – Present**
Ph.D in Computer Science — *4.0/4.0*
Advisor : Prof. Abhinav Shrivastava

Indraprastha Institute of Information Technology, Delhi, India — **Aug. 2015 – May 2019**
B.Tech. in Computer Science and Engineering — *9.89/10.0*

Research Interests

I am interested in solving problems using less supervision and uncurated as well as synthetic data. Recently I have been working on improving recognition using generation especially using diffusion models as synthetic data sources. I have previously explored tasks across recognition and generation focusing on different supervision strategies and propose modified architectures and losses to utilize the data better under different settings.

Publications

Gen2Det: Generate to Detect
S. Suri, *F. Xiao, A. Sinha, S. Culatana, R. Krishnamoorthi, C. Zhu, A. Shrivastava*
Under Review

LiFT: A Surprisingly Simple Lightweight Feature Transform for Dense ViT Descriptors
S. Suri*, *M. Walmer**, *K. Gupta, A. Shrivastava*
Under Review (* Equal Contribution)

GRIT: GAN Residuals for Image-to-Image Translation
S. Suri*, *M. Meshry**, *L. Davis, A. Shrivastava*
Winter Conference on Applications of Computer Vision (WACV) 2024 (* Equal Contribution)

Diff2Lip: Audio Conditioned Diffusion Models for Lip-Synchronization
S. Mukhopadhyay, ***S. Suri****, R. Gadde, A. Shrivastava*
Winter Conference on Applications of Computer Vision (WACV) 2024

SparseDet: Improving Sparsely Annotated Object Detection with Pseudo-positive Mining
S. Suri*, *S. Rambhatla**, *R. Chellappa, A. Shrivastava*
International Conference on Computer Vision (ICCV) 2023 (* Equal Contribution)

Teaching Matters: Investigating the Role of Supervision in Vision Transformers
*M. Walmer**, ***S. Suri****, *K. Gupta, A. Shrivastava*
Conference on Computer Vision and Pattern Recognition (CVPR) 2023 (* Equal Contribution)

Towards Discovery and Attribution of Open-world GAN Generated Images
*S. Girish**, ***S. Suri****, *S. Rambhatla, A. Shrivastava*
International Conference on Computer Vision (ICCV) 2021 (* Equal Contribution)

Learned Spatial Representations for Few-shot Talking-Head Synthesis
M. Meshry, ***S. Suri****, L. Davis, A. Shrivastava*
International Conference on Computer Vision (ICCV) 2021

Improving Face Recognition Performance using TeCS^2 Dictionary
S. Suri*, A. Sankaran, M. Vatsa, R. Singh*
Pattern Recognition Letters (PRL) 2020

On matching faces with alterations due to plastic surgery and disguise
S. Suri*, A. Sankaran, M. Vatsa, R. Singh*
IEEE International Conference on Biometrics Theory, Applications and Systems (BTAS) 2018

An Interpretable Generative Model for Handwritten Digits Synthesis
Y. Zhu, ***S. Suri****, P. Kulkarni, Y. Chen, J. Duan, C. -C. Jay Kuo*
International Conference on Image Processing (ICIP) 2019

Angel or Demon? Characterizing Variations Across Twitter Timeline of Technical Support Campaigners
S. Gupta, G. S. Bhatia, ***S. Suri****, D. Kuchhal, P. Gupta, M. Ahamad, M. Gupta, P. Kumaraguru*
The Journal of Web Science Vol.6 (2019)

Professional Experience

Research Scientist Intern, Meta AI **May'23 – Dec'23**
Mentor : Chenchen Zhu *Utilizing Synthetic Data from Diffusion Models for Object Detection and Segmentation*
Proposed a novel pipeline to utilize synthetic data generated using grounded diffusion models and training object detection and segmentation models with it.

Applied Science Intern, AWS Textract **May'21 – Aug'21**
Mentors : Vijay Mahadevan and Ankan Bansal *Layout Aware Semi-Supervised Pre-Training for Document Understanding*
Proposed a semi-supervised approach for multimodal pre-training of transformers using document layout information. Showed improvement in multiple few-shot downstream tasks.

IBM Research, Bengaluru, India **May'19 – Jul'19**
Mentors : Srikanth Tamilselvam and Senthil Mani *Image Synthesis*
Worked on incorporating common sense from a knowledge base for fashion based image synthesis using GANs.

University of Southern California, Los Angeles **May'18 – Jul'18**
Mentor : Prof. C. -C. Jay Kuo *Interpretable Image Synthesis*
Worked on non Deep Learning based interpretable generative model for handwritten digit image synthesis.

IIIT Delhi, India **May'17 – Aug'17**
Mentors: Mayank Vatsa and Richa Singh *Face Recognition*
Developed an easy to use standalone system for face recognition to be deployed and used in practical settings.

Achievements

- **Dean's Fellowship 2019:** Awarded at the start of Ph.D at UMD.
- **AICTE-INAE Travel grant:** Awarded the grant to present my paper at BTAS 2018 in California, USA.
- **IUSSTF-Viterbi Scholarship 2018:** Funded by the Indo-US Science and Technology Forum to undertake a research internship at the Viterbi School of Engineering, University of Southern California
- **IIIT-Delhi Dean's Award for Research and Innovation 2018:** Awarded for my research on face recognition.
- **Dean's List Award 2016,'17,'18:** For excellent academic performance.
- **IIT-JEE Mains:** Secured an All India Rank of 2106 out of 1.5 million candidates.

Other Selected Projects

Latent Space Data Augmentations for Better Generalization **Aug'20 – Dec'20**
Mentor : Prof. Soheil Feizi *University of Maryland*

An Investigation of the Role of Learning Rate in Deep Learning **Aug'20 – Dec'20**
Mentor : Prof. Furong Huang *University of Maryland*

Detecting Obscene and Retouched Images **Jan'19 – May'19**
Mentor : Prof. Mayank Vatsa *IIIT Delhi*

Human Parsing using Cascaded Segmentation **Jan'19 – May'19**
Mentor : Prof. Rajiv Ratn Shah *IIIT Delhi*

Model Agnostic Adversarial Learning **Aug'18 – Dec'18**
Mentor : Prof. Richa Singh *IIIT Delhi*

Adversarial Learning on Medical Image Data **Jan'18 – May'18**
Mentor : Prof. Richa Singh *IIIT Delhi*

Deep Reinforcement Learning on Atari **Aug'17 – Dec'17**
Mentor : Prof. Mayank Vatsa *IIIT Delhi*

Wake Component Detection for Heading and Velocity Estimation of Ships using SAR Images **Aug'17 – Dec'17**
Mentor : Prof. A. V. Subramanyam *IIIT Delhi*

Teaching experience

Teaching Assistant **Jan'24 – May'24**
Introduction to Deep Learning *University of Maryland*

Teaching Assistant **Aug'23 – Dec'23**
Advanced Techniques in Visual Learning & Recognition *University of Maryland*

Teaching Assistant **Jan'19 – May'19**
Statistical Machine Learning *IIIT Delhi*

Teaching Assistant **Aug'17 – Dec'17**
Systems Management *IIIT Delhi*

Voluntary Service

Reviewed for IJCV'24, ICCV'23, CVPR'23, IJCV'23, WACV'23, BMVC'22, ECCV'22, CVPR'22, ICCV'21, CVPR'21, CVPR'20, BMVC'20, TBIOM'19

Relevant Coursework

Computer Vision and Machine Learning: Algorithms in Machine Learning: Guarantees and Analyses[1], Deep Learning[1], Advanced Techniques in Visual Learning and Recognition[1], Statistical Pattern Recognition[1], Digital Image Processing[2], Artificial Intelligence [2], Statistical Machine Learning[2], Advanced Machine Learning[2], Computer Vision[2], Multimedia Computing and Applications[2]
Mathematics: Advanced Numerical Optimization[1], Linear Algebra[2], Probability and Statistics [2], Discrete Mathematics[2], Multivariate Calculus[2], Theory of Computation[2], Linear Optimization[2]

Relevant Skills

Programming Languages: Python, MATLAB, C++
Libraries & Tools: PyTorch, TensorFlow, OpenCV

[1]University of Maryland, College Park
[2]IIIT-Delhi