Ameya Joshi

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EDUCATION

JAN 2020 - *Present*	Doctor of Philosophy (PhD) in ELECTRICAL ENGINEERING **New York University** (GPA: 3.89/4) Advisor: Dr. Chinmay Hegde
AUG 2018 - DEC 2019	Doctor of Philosophy (PhD) in ELECTRICAL ENGINEERING (TRANSFERRED TO NYU) **Iowa State University** (GPA: 3.78/4) Advisors: Dr. Chinmay Hegde, Dr. Soumik Sarkar
AUG 2010 - MAY 2014	Bachelor of Engineering (Hons.) in ELECTRICAL AND ELECTRONICS ENGINEERING **BITS Pilani University**, India

RESEARCH INTERESTS

Adversarial Attacks and Defenses for Deep Learning, Generative Models for Structured Data, Physics Informed Generative Models, Generative Adversarial Networks, Computer Vision

WORK EXPERIENCE

JAN 2020 - *Present*	**Graduate Research Assistant** at **NYU Tandon School of Engineering**, New York City, NY
	Adversarial Attacks and Defenses for Deep Models, Physics Informed Generative Models, Neural PDE Solvers, Generalization Theory for Neural Networks
AUG 2018 - DEC 2019	**Graduate Research Assistant** at **Iowa State University**, Ames, Iowa
	Adversarial Attacks and Defenses for Deep Models, Physics Informed Generative Models, Neural PDE Solvers.
MAY 2016 - JUL 2018	**Lead (previously Sr.) Computer Scientist** at **SigTuple Inc.**, Bengaluru, India
	Worked on building ML informed systems for pathology and ophthalmology. Led a team of 5 data scientists. Two papers published at ISBI'18. One patent granted by Indian PTO.
FEB 2015 - MAY 2016	**Member of Technical Staff** at **Tonbo Imaging**, Bengaluru, India
	Developed and deployed robust embedded systems (including linux kernel dev.) for night vision and IR devices for long range surveillance. Contributed to deployment of tracking and detection algorithms for IR imaging.
JUL 2014 - FEB 2015	**Computer Vision Engineer** at **Ducere Technologies**, Hyderabad, India
	Developed a computer vision system for obstacle detection used for navigation by the visually impaired. Also conceptualised and prototyped an image-to-Braille device for the visually impaired.

PUBLICATIONS

Conferences and Workshops

1. M. Cho, **A. Joshi**, X. Y. Lee, *et al.*, "Differentiable programming for piecewise polynomial functions," in *NeurIPS Workshop on Learning Meets Combinatorial Algorithms*, 2020

2. S. Botelho, **A. Joshi**, B. Khara, *et al.*, "Deep generative models that solve PDEs: Distributed computing for training large data-free models," in *Int. Conf. of High Perf. Comput., Netw., Storage and Analy.(SC) Workshop on ML in HPC (MLHPC)*, vol. arXiv:2007.12792, 2020

3. **A. Joshi**, B. Khara, S. Sarkar, *et al.*, "Solving linear PDEs with generative models," in *Asilomar Conf. on Signals, Systems and Computers*, 2020

4. **A. Joshi**, M. Cho, V. Shah, *et al.*, "Invnet: Encoding geometric and statistical invariances in deep generative models," in *Asso. of Adv. of Artif. Intell. (AAAI)*, 2020

5. **A. Joshi**, A. Mukherjee, S. Sarkar, *et al.*, "Semantic adversarial attacks: Parametric transformations that fool deep classifiers," in *Int. Conf. on Computer Vision (ICCV)*, 2019

6. A. Mukherjee, **A. Joshi**, S. Sarkar, *et al.*, "Semantic domain adaptation for deep classifiers via gan-based data augmentation," in *NeurIPS Workshop on ML for Autonomous Driving (ML4AD)*, 2019

7. **A. Joshi**, V. Shah, S. Ghosal, *et al.*, "Generative models for solving nonlinear partial differential equations," in *NeurIPS Workshop on ML for Physical Sciences (ML4PS)*, 2019

8. A. Mukherjee, **A. Joshi**, S. Sarkar, *et al.*, "Attribute-controlled traffic data augmentation using conditional generative models," in *CVPR Workshop on Vision for All Seasons (VAS)*, 2019

9. S. Athar, A. Vahadane, **A. Joshi**, *et al.*, "Weakly supervised fluid filled region localization in retinal oct scans," in *ISBI*, IEEE, 2018

10. A. Vahadane, **A. Joshi**, K. Madan, *et al.*, "Detection of diabetic macular edema in optical coherence tomography scans using patch based deep learning," in *ISBI*, IEEE, 2018

11. A. Mahurkar, **A. Joshi**, N. Nallapareddy, *et al.*, "Selective visualization of anomalies in fundus images via sparse and low rank decomposition," in *ACM SIGGRAPH 2014 Posters*, ser. SIGGRAPH '14, 2014

Preprints

1. M. Cho, **A. Joshi**, and C. Hegde, "ESPN: Extremely sparse pruned networks," vol. arXiv:2006.15741, 2020

Patents

1. **A. Joshi** *et al.*, "Method and system for detecting disorders in retinal images," US patent pending, Indian Patent 313571, 2018

Programming Languages and Frameworks

Python, C, C++, Shell, TensorFlow, PyTorch, JAX, OpenCV, CUDA, Matlab

Graduate Courses

Iowa State University

Deep Learning, Optimization for Machine Learning, Random Processes, Special Topics on Stat. Machine Learning

New York University

Statistical Learning Theory, Advanced Machine Learning, Image Processing, Algorithmic Machine Learning and Data Science, ML for Cybersecurity

Scholarships and Awards

2018	2nd Place, MRS OpenData Challenge, Material Research Society
2010 - 14	Merit-cum-Need Scholarship, **BITS Pilani**
2007	National Talent Search Scholar (Top 1000 students) , **NCERT**, India

Reviewing Responsibilities

1. AAAI Conference on Artificial Intelligence, 2021
2. International Conf. on Learning Representations, 2021
3. Plant Phenomics, Science partner journal, 2020
4. Asilomar Conference on Signals, Systems, and Computers, 2020