

BHAVYA VASUDEVA

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EDUCATION

- University of Southern California** 2021-Present
Ph.D. in Computer Science
Advisor: Prof. Vatsal Sharan
- Indian Institute of Technology Roorkee** 2016-2020
B. Tech. in Electronics and Communication Engineering (GPA: 9.362/10, Rank: 3/84)
Thesis: Compressive Sensing MRI Reconstruction using GANs
Advisors: Prof. Saumik Bhattacharya & Prof. P. M. Pradhan

RESEARCH INTERESTS

Theoretical Foundations of Deep Learning, Robustness to Distributional Shifts, ML for Healthcare

PUBLICATIONS AND PREPRINTS

- Implicit Bias and Fast Convergence Rates for Self-attention
[B. Vasudeva*](#), P. Deora*, C. Thrampoulidis *BGPT Workshop@ICLR 2024; Submitted*
- Simplicity Bias of Transformers to Learn Low Sensitivity Functions
[B. Vasudeva*](#), D. Fu*, T. Zhou, E. Kau, Y. Huang, V. Sharan *BGPT Workshop@ICLR 2024; Submitted*
- Mitigating Simplicity Bias in Deep Learning for Improved OOD Generalization and Robustness
[B. Vasudeva](#), K. Shahabi, V. Sharan *SCIS Workshop@ICML 2023; Submitted*
- Fast Test Error Rates for Gradient Methods on Separable Data
P. Deora*, [B. Vasudeva*](#), V. Sharan, C. Thrampoulidis *HiLD Workshop@ICML 2023; ICASSP 2024*
- Compressed Sensing MRI Reconstruction with Co-VeGAN: Complex-Valued Generative Adversarial Network
[B. Vasudeva*](#), P. Deora*, S. Bhattacharya, P. M. Pradhan *WACV 2022*
- LoOp: Looking for Optimal Hard Negative Embeddings for Deep Metric Learning
[B. Vasudeva*](#), P. Deora*, S. Bhattacharya, U. Pal, S. Chanda *ICCV 2021*
- Structure Preserving Compressive Sensing MRI Reconstruction using Generative Adversarial Networks
P. Deora*, [B. Vasudeva*](#), S. Bhattacharya, P. M. Pradhan *CVPR Workshops 2020*
- Multi-Phase Locking Value: A Generalized Method for Determining Instantaneous Multi-frequency Phase Coupling
Elsevier Biomedical Signal Processing and Control
[B. Vasudeva](#), R. Tian, D. H. Wu, S. A. James, H. H. Refai, L. Ding, F. He, Y. Yang
- Efficient Implementation of LMS Adaptive Filter based FECG Extraction on an FPGA
[B. Vasudeva](#), P. Deora, P. M. Pradhan, S. Dasgupta *IET Healthcare Technology Letters*
(*equal contribution)

OTHER PROJECTS

- Simplicity Bias of SGD for 1-hidden-layer Neural Networks; EE546, USC [\[Report\]](#)
- Survey of OoD Generalization Methods; CS699, USC [\[Report\]](#)
- Low-light Image Enhancement; IIT Roorkee [\[Code, Report\]](#)

SKILLS

- **Languages:** Python, MATLAB, \LaTeX
- **DL Frameworks:** Pytorch, Tensorflow, Keras

WORK EXPERIENCE

ISI Kolkata | Visiting Researcher

June'20 - June'21

Advisors: Prof. Saumik Bhattacharya & Prof. Umapada Pal

Northwestern University | Undergraduate Intern, SN Bose Scholar

May'19 - July'19

Advisor: Prof. Yuan Yang

TEACHING AND MENTORING EXPERIENCE

· Teaching

- TA for CSCI567: Machine Learning in Fall'22
- TA for CSCI699: Theory of Machine Learning in Fall'23

· Mentoring

- Luke Pratt, SHINE'22 summer research program (K-12 STEM outreach) [Poster]
- Devin Martin, SURE'22 summer research program (USC BS CS) [Poster]
- Kameron Shahabi (USC BS-MS CS)
- Youqi Huang, SURE'23 and CURVE'23-24 research programs (USC BS CS) [Poster]
- Elliott Kau (USC BS-MS CS)
- Jung Whan Lee (USC MS CS)

SERVICE

- **Reviewer:** ICML 2024, ICLR 2024, NeurIPS 2023, SCIS Workshop@ICML 2023
- **Top Reviewer:** NeurIPS 2023
- **Volunteer:** ICML 2021, ICLR 2021

AWARDS AND ACADEMIC ACHIEVEMENTS

- USC **WiSE travel grant** for attending ICML 2023 *2023*
- Selected for **EEML** and **CMMRS** Summer Schools *2021*
- **Singhal's Tech. for Society Award** for best undergraduate thesis at institute level *2020*
- **Viney K. and Sunita Jain Award** for academic excellence, IIT Roorkee *2020*
- **3AI Pinnacle Student of the Year Award** for undergraduate thesis *2020*
- **S. N. Bose Scholars Program**, among 50 students selected across India for an internship in the US *2019*
- Third position, **International Robotics Challenge** at Techfest'17, IIT Bombay *2017*
- Secured IIT JEE Advanced **All India Rank 978**, 99.5 percentile *2016*
- Secured IIT JEE Mains **All India Rank 336** among 1.2 million candidates *2016*
- Awarded **Kishore Vaigyanik Protsahan Yojana (KVPY)** science fellowship by IISc Bangalore *2015*
- Awarded **National Talent Search Examination (NTSE)** scholarship by the Government of India *2014*