Nebiyou Yismaw

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Research Interests

Computational imaging, inverse problems, generative models, and robustness in machine learning algorithms.

Education

University of California, Riverside — CA, USA
Ph.D. in Electrical and Computer Engineering — *Sep. 2022 – Present*

Carnegie Mellon University, Africa — Kigali, Rwanda
M.S. in Electrical and Computer Engineering — *Aug. 2017 – Dec. 2018*

Addis Ababa University — Addis Ababa, Ethiopia
B.Sc. in Electrical and Computer Engineering — *Sep. 2012 – Jun. 2017*

Research Experience

Research Scientist Intern — Jun. 2026 – Present
Meta — *Sunnyvale, CA*

- Researching image and video restoration networks for next-generation smart wearable devices, including chromatic aberration correction, RAW image denoising, demosaicing, and super-resolution.

Graduate Research Assistant — Sep. 2022 – Present
University of California, Riverside — *Riverside, CA*

- Develop robust and efficient methods for solving inverse problems in computational imaging, spanning diffusion-based solvers, learned deep architectures, model-based solvers, and learned operators for spatially-varying systems, advised by Prof. M. Salman Asif.

Research Scientist Intern — Jun. 2025 – Sep. 2025
Meta — *Sunnyvale, CA*

- Developed a novel neural video compression and restoration framework that achieved significant gains in rate-distortion performance over both standard and hybrid HEVC baselines, targeting low-bandwidth capture and edge deployment.

Computational Imaging/ML Intern — June 2024 – Sep. 2024
Apple — *Cupertino, CA*

- Contributed to a confidential project under NDA, advancing research in **computational imaging and machine learning** for next-generation smartphone imaging technologies.

Summer Research Assistant — May 2018 – Aug. 2018
CMU Africa — *Kigali, Rwanda*

- Researched speech emotion recognition and built a low-cost interactive voice response tool, advised by Prof. Tim Brown.

Professional Experience

Software Engineer — Feb. 2019 – Jun. 2022
Cardinal Peak — *US/Remote*

- Worked on video and audio streaming systems, including media transcoding, stream management, backend services, QA for set-top-box platforms, and ad-serving infrastructure using tools such as GStreamer, Node.js, Go, and AWS Kinesis Video Streams.
- Developed internal Edge ML prototypes on NVIDIA Jetson Nano using TensorFlow, exploring real-time machine learning workflows for embedded IoT devices.

Publications

- **N. Yismaw**, V. Saragadam, A. C. Sankaranarayanan, and M. S. Asif, **Provable and Robust Wavefront Sensing via Self-Reference Interferometry.** *Proc. European Conference on Computer Vision (ECCV), 2026.* [arXiv:2604.03564] [arXiv:2604.03564]
- **N. Yismaw**, C. Hegde, and M. S. Asif, **Efficient Methods for Modeling Shift-Varying Operators.** *Proc. Asilomar Conf. on Signals, Systems, and Computers (Asilomar), 2025.*
- **N. Yismaw**, U. S. Kamilov, and M. S. Asif, **Gaussian is All You Need: A Unified Framework for Solving Inverse Problems via Diffusion Posterior Sampling.** *IEEE Transactions on Computational Imaging, 2025.* [arXiv:2409.08906]
- **N. Yismaw**, U. S. Kamilov, and M. S. Asif, **Covariance-Corrected Diffusion Models for Solving Inverse Problems.** *Proc. IEEE Statistical Signal Processing Workshop (SSP), 2025.*
- Y. Garg, **N. Yismaw**, R. Hyder, A. P.-Bennette, A. Roy-Chowdhury, and M. S. Asif, **Parameter-Efficient Multi-Task and Multi-Domain Learning Using Factorized Tensor Networks.** *IEEE Open Journal of Signal Processing, 2025.* [arXiv:2310.06124]
- **N. Yismaw**, U. S. Kamilov, and M. S. Asif, **Domain Expansion via Network Adaptation for Solving Inverse Problems.** *IEEE Transactions on Computational Imaging, vol. 10, pp. 549–559, 2024.* [arXiv:2310.06235]
- **N. Yismaw**, U. S. Kamilov, and M. S. Asif, **Parameter-Efficient Adaptation for Computational Imaging.** *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 13051–13055, 2024.*

Teaching Experience

CS-229 MACHINE LEARNING Spring 2025
UCR

EE-241 Advanced Digital Image Processing Winter 2025
UCR

EE-142/CS-171 Introduction to Machine Learning and Data Mining Fall 2023, Fall 2024, Winter 2026
UCR

11-785 Introduction to Deep Learning Fall 2018
CMU

Academic Service

Conference Reviewer: NeurIPS, ICLR, IEEE TCI, AAAI, WACV, ECCV, ICCV, CVPR