Abhijay Ghildyal

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Education

Portland State University, Oregon, USA — *Sep 2019 – Jul 2025*
Ph.D. in Computer Science
Thesis: *Alignment of Perceptual Similarity Metrics with Human Perception*

Washington State University, Pullman, USA — *Aug 2018 – Aug 2019*
Graduate Student in Computer Science

Savitribai Phule Pune University, India — *Jun 2011 – Jun 2015*
B.Eng. in Information Technology

Publications

Abhijay Ghildyal, Rajesh Sureddi, Nabajeet Barman, Saman Zadtootaghaj, and Alan C Bovik, "Non-Aligned Reference Image Quality Assessment for Novel View Synthesis," in *Winter Conference on Applications of Computer Vision (WACV)*, 2026.

MR Taesiri, **Abhijay Ghildyal**, Saman Zadtootaghaj, Nabajeet Barman, and Cor-Paul Bezemer, "VideoGameQA-Bench: Evaluating Vision-Language Models for Video Game Quality Assurance," in *Neural Information Processing Systems (NeurIPS)*, 2025.

Abhijay Ghildyal, Nabajeet Barman, and Saman Zadtootaghaj, "Foundation models boost low-level perceptual similarity metrics," in *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2025.

Abhijay Ghildyal, Li-Yun Wang, and Feng Liu, "WP-CLIP: Leveraging CLIP to Predict Wölfflin's Principles in Visual Art," in *International Conference on Computer Vision (ICCV) AI for Visual Arts Workshop*, (Oral), 2025.

Abhijay Ghildyal, Yuanhan Chen, Saman Zadtootaghaj, Nabajeet Barman, and Alan C Bovik, "Quality Prediction of AI Generated Images and Videos: Emerging Trends and Opportunities," *arXiv:2410.08534*, 2024.

Nasim J Avanaki, **Abhijay Ghildyal**, Nabajeet Barman, and Saman Zadtootaghaj, "LAR-IQA: A Lightweight, Accurate, and Robust No-Reference Image Quality Assessment Model," in *European Conference on Computer Vision (ECCV) Advances in Image Manipulation Workshop*, 2024.

Abhijay Ghildyal and Feng Liu, "Attacking Perceptual Similarity Metrics," *Transactions on Machine Learning Research (TMLR)*, 2023, (Featured Certification top $\sim 0.01\%$ of the accepted papers that year).

Qiqi Hou, **Abhijay Ghildyal**, and Feng Liu, "A Perceptual Quality Metric for Video Frame Interpolation," in *European Conference on Computer Vision (ECCV)*, 2022.

Abhijay Ghildyal and Feng Liu, "Shift-tolerant Perceptual Similarity Metric," in *European Conference on Computer Vision (ECCV)*, 2022.

Experience

Applied Scientist II — *Redmond, WA*
Microsoft — *Apr 2026 – Present*

- Designing and evaluating video quality assessment methods for screen content.

Machine Learning Researcher — *Seattle, WA*
Sony Interactive Entertainment — *Oct 2024 – Mar 2026*

- Developed learned degradation and enhancement models for next generation video streaming.
- Created a benchmarking dataset to evaluate vision-language models for video game quality assurance.
- Implemented AI upscaling workflows in ComfyUI leveraging Stable Diffusion, DreamShaper, and Flux to enhance image quality.
- Conducted subjective evaluations of novel view synthesis methods and developed a non-aligned reference

image quality assessment model.

Applied Scientist Intern *New York, NY*
Amazon *Jun 2023 – Oct 2023*

- Applied video restoration and GAN-based methods to enhance novel views generated by NeRF-GS models.

Deep Learning Intern *Portland, OR*
Cambia Health Solutions *May 2019 – Jul 2019*

- Developed sequence prediction models to predict future events in a patient's care path.

Data Scientist *Bengaluru, India*
Quantela *Nov 2017 – Jul 2018*

- Built predictive models for land use and land cover classification from Sentinel-2 and LANDSAT-8 imagery.

Data Science Research Analyst *Bengaluru, India*
Mu Sigma *Oct 2015 – Nov 2017*

- Implemented human detection in videos to analyze queue and checkout durations in retail environments.
- Performed time series analysis for real-time intra-day algorithmic trading on the NYSE.
- Developed forecasting models using ARIMA-GARCH, Reinforcement Learning, and Recurrence Plots.
- Executed pairs trading strategy using cointegration strengths for real-time analysis with R and Python.

Research Intern *Mumbai, India*
Indian Institute of Technology, Bombay *Jun 2015 – Sep 2015*

- Developed Lokavidya, an Android app for farmer-made spoken tutorials, achieving 10x video size reduction.
- Built an Interactive Voice Response System for ordering groceries from Abhinav Farmers Club.

Academic Experience

Graduate Research Assistant *Portland, OR*
Portland State University *Sep 2019 – Jul 2025*

Computer Graphics and Vision Lab

- Researched and implemented approaches for aligning perceptual similarity metrics with human perception.
- Researched unsupervised optical flow estimation techniques for real-world videos.
- Developed enhancement algorithms to remove compression artifacts leveraging peak-quality frames.

Graduate Research Assistant *Pullman, WA*
Washington State University *Dec 2018 – May 2019*

Center for Precision and Automated Agricultural Systems

- Enhanced waypoint prediction for efficient vision-based UAV navigation in an Apple Orchard.

Intelligent Robot Learning Lab

- Trained a caregiver robot in the ROS Gazebo environment using reinforcement learning that fuses pose and LiDAR data for human-following.

Patents

- (Pending) Per Game Manifest for Controlling Detail Levels of Streamed Video Games.

Technical Skills

Python, PyTorch, Machine Learning, Computer Vision, R, ShellScript, Tensorflow, JavaScript, C.

Awards

- Richard Kieburtz Memorial Graduate Fellowship, 2023.
- Featured Certification (equivalent to Best Paper) in Transactions on Machine Learning Research, 2023.

Selected Talks

- 'Predicting Wölfflin's Principles in Visual Art using Vision-Language models', AI for Visual Arts Workshop at International Conference on Computer Vision, Oct 2025.
- 'Quality Assessment in the era of AI-Generated and AI-Enhanced Content', at ACM Mile-High Video Conference, Feb 2025.
- 'Foundation Models Boost Low-Level Perceptual Similarity Metrics', at VQEG, Nov 2024.
- 'Robust Perceptual Similarity Metrics', at Video Quality Experts Group (VQEG), Mar 2024.

Professional Service

Vice Chair at VQEG: Subjective and Objective Assessment of GenAI Content (SOGAI).

Journal/Conference/Workshop Reviewer: TPAMI (2024, 2025), TMLR (2023 and 2025), WACV (2024 and 2025), ACM MM (2022), ECCV (2024), ICASSP (2025), AAAI (2025,2026), ACM MMsys (2025,2026), IJCNN (2025), and CVPR (2025). WomenInComputerVision (CVPR 2023,2024, ECCV 2024), AI4VA: AI for Visual Arts Workshop and Challenges (ECCV 2024, ICCV 2025), Out Of Distribution Generalization in Computer Vision (ECCV 2024).

Teaching Assistant: Artificial Intelligence (Fall 2019, Winter 2020), Machine Learning (Spring 2021), and Computer Graphics (Fall 2021), Numerical Computation (Winter 2024).

References

Dr. Feng Liu, Professor, Department of Computer Science, Portland State University, Email: fliu@pdx.edu.