Mahesh Bhosale

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Research Interest

Image/Video synthesis, Diffusion Model Hallucinations, Multi-Modal Large Language Models (MLLMs).

Education

State University of New York at Buffalo, Buffalo, NY, USA Sept 2023 – May 2026 (Expected)
PhD in Computer Science

- Advisor: Dr. David Doermann
- Google CS Research Mentorship Scholar 2023.

State University of New York at Buffalo, Buffalo, NY, USA Sept 2021 – May 2023
MS by Research in Computer Science

- Advisor: Dr. David Doermann
- Projects: Person Re-identification in Videos.

Walchand College of Engineering, Shivaji University, Sangli, India June 2013 – May 2017
BS in Information Technology

Experience

Research Assistant May 2022 – Present
Institute of Artificial Intelligence and Data Science, University at Buffalo, Buffalo, NY, USA

- Research Topics: Medical Image Synthesis, Diffusion Hallucinations, MLLMs.

Software Engineer Aug 2017 – Aug 2021
Veritas Technologies LLC, Pune, India

- Advisor: Anindya Banerjee. Developed a novel scheduling algorithm on top of LSTM storage and compute resource prediction. Reducing execution time of resource intensive tasks by 56%. Bench-marked other Deep learning based sequence modeling solutions. Bestowed Certificate of Merit Veritas Illuminate 2020.

Software Engineer Intern Jan 2017 – June 2017
Veritas Technologies LLC, Pune, India

- Reduced execution time of variants of the 'ls' command by 20% using directory inode read ahead algorithm.

Publications

Google Scholar

ICCV 2025 **Mahesh Bhosale**, Abdul Wasi, Yuanhao Zhai, Yunjie Tian, Samuel Border, Nan Xi, Pinaki Sarder, Junsong Yuan, David Doermann, Xuan Gong, PathDiff: Histopathology Image Synthesis with Unpaired Text and Mask Conditions, in International Conference on Computer Vision, 2025. [Paper] [Code]

Under Review **Mahesh Bhosale***, Naresh Kumar Devulapalli*, Abdul Wasi, Chau Pham, Vishnu Lokhande, David Doermann, Controlling Hallucinations in Diffusion Models : A Case Study on Chess Images.

Under Review Chau Pham, Quan Dao, **Mahesh Bhosale**, Yunjie Tian, Dimitris N. Metaxas, David Doermann, AutoEdit: Automatic Hyperparameter Tuning for Image Editing.

ICDAR 2024 Pengyu Yan, **Mahesh Bhosale**, Jay Lal, Bikhyat Adhikari, and David Doermann, ChartReformer: Natural Language-Driven Chart Image Editing, in International Conference on Document Analysis and Recognition, 2024. [Paper] [Code]

ICDAR 2023 Jay Lal, **Mahesh Bhosale***, Aditya Mitkari*, and David Doermann, LineFormer: Rethinking Line Chart Data Extraction as Instance Segmentation, in International Conference on Document Analysis and Recognition, 2023. [Paper] [Code]

arXiv 2023 **Mahesh Bhosale***, Abhishek Kumar*, and David Doermann, Player Re-Identification Using Body Part Appearences, arXiv 2023. [Paper] [Code]

Professional Services

Teaching Assistant

CSE 574 Introduction to Machine Learning, Spring 2024, Fall 2024, Spring 2025

CSE 702 Automated Analysis of Sporting Event Videos, Summer 2022

CSE 521 Introduction to Operating Systems, Spring 2022, Fall 2022, Fall 2023

Conference Reviewer

IEEE International Conference on Computer Vision (ICCV) 2025

Neural Information Processing Systems (NeurIPS) 2025

Honors and Awards

Research Mentorship Scholar, Google, USA (remote)	2023
Certificate of Merit, Illuminate Annual Technical Conference, Veritas Technologies LLC, Pune, India	2020
Silver Medal, World Code Sprint, Hacker-rank	2016
Honorable Mention, ACM-ICPC Amritapuri Regional, Amrita University, Coimbatore, India	2015
Runner Up (out of 75 teams), Best Project Competition, Department of IT, WCE, Sangli, India	2015
Runner Up (600 participants), Coding Competition, MindSpark, College of Engineering, Pune, India	2014
DST Inspire Science Camp (Top 1%), Government of India and IIIT, Pune, India	2014

Technical Skills

C, C++, Python, R, Pytorch, ROS