

Kartik Narayan

[LinkedIn](#) | [Github](#) | [Google Scholar](#)
<https://kartik-3004.github.io/portfolio/>

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Summary

I am a 2nd year Ph.D. student in the Computer Science Department at Johns Hopkins University. My research is primarily focused on computer vision and face analysis, with a particular emphasis on multimodal LLMs, unified vision models, parameter-efficient fine-tuning, face segmentation, and representation learning.

Education

Johns Hopkins University

Ph.D. Computer Science, Advisor: Dr. Vishal M. Patel

Baltimore, MD

2023 - Present

Indian Institute of Technology Jodhpur

Bachelors in Computer Science and Engineering

Jodhpur, India

2019 - 2023

Publications

1. **Kartik Narayan**, Harsh Agarwal, Kartik Thakral, Surbhi Mittal, Mayank Vatsa, Richa Singh. **DF-Platter: Multi-Face Heterogeneous Deepfake Dataset**. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2023)*.
2. **Kartik Narayan**, Vibashan VS, Rama Chellappa, Vishal M. Patel. **FaceXFormer: A Unified Transformer for Facial Analysis**. *Under Review*. [[arxiv](#)]
3. **Kartik Narayan**, Vibashan VS, Vishal M. Patel. **SegFace: Face Segmentation of Long-Tail Classes**. *Under Review*. [[paper](#)]
4. **Kartik Narayan**, Nithin Gopalakrishnan Nair, Jennifer Xu, Rama Chellappa, Vishal M. Patel. **PETALface: Parameter Efficient Transfer Learning for Low-resolution Face Recognition**. *Under Review*. [[paper](#)]
5. **Kartik Narayan**, Vishal M. Patel. **Hyp-OC: Hyperbolic One Class Classification for Face Anti-Spoofing**. *2024 18th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2024)*.
6. Nithin Gopalakrishnan Nair, **Kartik Narayan**, Maitreya Suin, Ram Prabhakar, Jennifer Xu, Soraya Stevens, Joshua Gleason, Nathan Shindman, Rama Chellappa, Vishal M. Patel. **Improved Representation Learning for Unconstrained Face Recognition**. *Under Review*.
7. Kartik Thakral, Harsh Agarwal, **Kartik Narayan**, Surbhi Mittal, Mayank Vatsa, Richa Singh. **DeePhyNet: Towards Detecting Phylogeny in Deepfakes**. *Under Review in TBIOM*. [[paper](#)]
8. **Kartik Narayan**, Harsh Agarwal, Kartik Thakral, Surbhi Mittal, Mayank Vatsa, Richa Singh. **DeePhy: On Deepfake Phylogeny**. *2022 IEEE International Joint Conference on Biometrics (IJCB 2022)*.
9. **Kartik Narayan**, Harsh Agarwal, Surbhi Mittal, Kartik Thakral, Suman Kundu, Mayank Vatsa, Richa Singh. **DeSI: Deepfake Source Identifier for Social Media**. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW 2022)*.
10. **Kartik Narayan**, Heena Rathore, Faycal Znidi. **Using Epidemic Modeling, Machine Learning & Control Feedback Strategy for Policy Management of COVID-19**. *IEEE Access 10 (2022): 98244-98258*.
11. Anirban Das, **Kartik Narayan**, Suchetana Chakraborty. **Leveraging Ambient Sensing for the Estimation of Curiosity-Driven Human Crowd**. *2022 IEEE International Systems Conference (SysCon 2022)*.

Research Experience

Johns Hopkins University

Research Assistant, Vision and Image Understanding Lab advised by Dr. Vishal M. Patel

Baltimore, Maryland

2023 - Present

- Leading research efforts for the IARPA BRIAR grant, focusing on face recognition in extreme scenarios.
- Currently developing an evaluation suite and an instruction-tuning dataset to benchmark multimodal LLMs on face understanding tasks.

Indian Institute of Technology Jodhpur

Student Researcher, IAB Lab advised by Prof. Richa Singh and Prof. Mayank Vatsa

Jodhpur, India

2022 - 2023

- Worked on deepfake video generation, with a special emphasize on multi-face, low-resolution, and occluded videos.
- Introduced the concept of phylogeny (evolution) in deepfake video generation by sequentially swapping multiple faces.
- Developed the DeSI algorithm, capable of detecting deepfake videos on the Twitter platform and predicting their spread.

University of Texas, San Antonio

Research Intern under Dr. Heena Rathore

Remote

2021 - 2022

- Predicted optimal constraints for the SIR differential equation to improve the forecasting of COVID-19 case numbers.

Academic Services

- **Invited Reviewer:** CVPR, ECCV, AAAI, NeurIPS, TPAMI, TIFS, TBIOM, IJCV

Skills Summary

- **Programming:** Python, C/C++, JavaScript
- **ML/DL:** PyTorch, TensorFlow, Keras, OpenCV, Sklearn, Numpy, Pandas, Matplotlib,
- **Development:** HTML, CSS, React.js, Node.js, Bootstrap, Firebase, MongoDB, ReactNative
- **Tools:** Docker, Kubernetes, GIT, AWS

Teaching Experience

Teaching Assistantship: Assisted in teaching by conducting weekly lab sessions, holding special doubt-clearing sessions, preparing quizzes, and grading assignments for the following courses:

- Deep Learning [Spring 2023]
- Introduction to Machine Learning [Fall 2022]
- Pattern Recognition and Machine Learning [Spring 2022]

Co-curricular Activities

- **Internship Head, CSE at the placement cell of IIT Jodhpur** [2021 - 2022]
Coordinated with companies to invite them for campus internships and placements.
- **Head of technical events in Prometeo, IIT Jodhpur** [2021 - 2022]
Led a team of 50+ students to organize technical competitions, attracting over 1,500 participants from across India.
- **Secretary of PHEME, The IITJ Newsletter Club** [2020 - 2021]
Managed a club of 80+ members responsible for creating newsletters, reports, conducting surveys, etc.
- **Student Guide at Student Wellbeing Committee, IITJ** [2020 - 2023]
Mentored 10 freshmen from diverse backgrounds to support their transition into college, guiding them in both academic and non-academic pursuits.