

Prakhar Kaushik

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SUMMARY

A computational cognition researcher (with 5+ years of independent research experience) dedicated to developing robust, efficient, and interpretable AI models—including 3D, generative, and vision-language systems—with the goal of advancing more human-like intelligence. Core expertise includes efficient generative model adaptation (EigenLoRAx), text-to-image (T2I) model alignment, and the integration of cognitive science principles into AI system design.

- Authored 17+ peer-reviewed publications in leading venues (ICCV, CVPR, ICLR, NeurIPS, ECCV), covering efficient tuning of large models, human-aligned evaluation, continual learning, 3D vision, and dataset creation.
- Led AI development at Amplio, creating sports analytics algorithms that leverage both physical and mental human feedback for improved performance insights.
- Skilled in PyTorch, TensorFlow, multimodal transformers, low-rank adaptation, large-scale datasets, and building robust human feedback systems.

RESEARCH and INDUSTRY EXPERIENCE (3.5 + 5 (PhD) total experience)

Amazon

Palo Alto, CA

Applied Scientist Intern (L5), Visual Search

06/2022 - 12/2022

- Created a method for Structured Image Inpainting using custom designed Hough/Radon transform conditioning layers for Amazon's Design Your Room product. Manager - Dr. Michael Lou.

Applied Scientist Intern (L5), Sponsored Products

06/2021 - 09/2021

- Wrote paper titled "Causal Analysis of Weblab Intervention" which consisted of thorough causal analysis of Weblab for Sponsored Products intervention analysis. Manager - Dr. Avishek Saha

Johns Hopkins University

Baltimore, MD

Graduate Research Assistant, Computational Cognition, Vision, and Learning lab

08/2020 - Now

- Working on 3D Vision, Analysis by Synthesis, Vision-Language Models, Unsupervised Learning and Robustness

Graduate Research Assistant, Laboratory for Computational Sensing + Robotics

06/2020 - 09/2020

- Created a Realtime, Unsupervised Robot Path Detection Algorithm. Manager - Dr. Marin Kobilarov

Graduate Research Assistant, School of Public Health

10/2018 - 04/2019

- Created a traffic image dataset from all around the world for traffic behavior analysis using robust object detection.

Graduate Research Assistant, Information Security Institute

06/2018 - 10/2018

CR Rao Institute of Mathematics, Statistics & Computer Science

Hyderabad, India

Visiting Researcher

04/2017 - 07/2017

- Worked on topics related to Signal Processing and Cryptography. Advisor - Dr. Vishal Saraswat

Indian Statistical Institute

Kolkata, India

Research Intern

05/2016 - 08/2016

- Microsoft Asia Research Internship. Worked on Side Channel Attacks. Advisor - Dr. Vishal Saraswat

Amplio

Chantilly, VA

AI Development Lead Engineer, Sports Performance and Health Analytics

04/2019 - 04/2020

- Developed multimodal deep learning methods to predict and analyze athlete physical and mental performance. Created custom dataset, metrics and predictive model for a 'digital twin'.

Ernst & Young

Noida, India

Risk Analyst

07/2017 - 12/2017

TEACHING EXPERIENCE

Johns Hopkins University
Graduate Teaching Assistant, Probabilistic Models of the Visual Cortex

Baltimore, MD
08/2024 - 12/2024

SELECTED PUBLICATIONS (Refer to Appendix for entire list)

- [EigenLoRAx: Recycling Adapters to Find Principal Subspaces for Resource-Efficient Adaptation and Inference](#), P Kaushik, A Vaidya, S Chaudhari, A Yuille, Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR) 2025, 649-659. Workshop **Oral**. [Project Page](#).
 - Media Coverage of this work - [In the World of AI, Who Speaks for the Trees?](#).
- [Gaussian Scenes: Pose-Free Sparse-View Scene Reconstruction using Depth-Enhanced Diffusion Priors](#), S Paul, P Kaushik, A Yuille, Transactions on Machine Learning Research (TMLR) 2025. [Project Page](#)
- [Source-Free and Image-Only Unsupervised Domain Adaptation for Category Level Object Pose Estimation](#), P Kaushik, A Mishra, A Kortylewski, A Yuille, International Conference on Learning Representations (ICLR) 2024.
- [Understanding catastrophic forgetting and remembering in continual learning with optimal relevance mapping](#), P Kaushik, A Gain, A Kortylewski, A Yuille, 2021 Conference on Neural Information Processing Systems (NeurIPS) - W
- [Scaling 3D Compositional Models for Robust Classification and Pose Estimation](#), P Kaushik*, X Yuan*, G Zhang*, A Jesslen, A Kortylewski, A Yuille, Proceedings of IEEE/CVF International Conference on Computer Vision (ICCV) 2025

Complete list on the [homepage](#) and [Google Scholar](#).

EDUCATION

Johns Hopkins University
PhD. Computer Science

Baltimore, MD

Advisor: Dr. Alan Yuille, Bloomberg Distinguished Professor in Cognitive Science and Computer Science 09/2020 - 2025
MS. Computer Science 2018 - 2020

Indian Naval Academy, etc.
Bachelors in Technology, Electronics and Communications

India
08/2013 - 05/2017

Rashtriya Indian Military College, High School

India

AWARDS/TALKS/MEDIA COVERAGE

- **Talks** Artificial Intelligence for Engineering and Medicine Lab (Dr. Rama Chellappa) - April 2024, JHU Cognitive Neuroscience and Deep Learning Group - February 2025
- **Media Coverage** [In the World of AI, Who Speaks for the Trees?](#).
- Lieutenant General MM Lakhera Silver Medal, 2012 – Best In Mathematics.
- Colonel Haughten Silver Medal, 2012.
- Lieutenant Commander Rajat K Sen Silver Medal, 2010.
- UN Jha Memorial Gold Medal, 2010.
- All India Rank 1 - Rashtriya Indian Military College Examination
- All India Rank 2 - UPSC National Defence Academy and Naval Academy Examination

MISCELLANEOUS/INTERESTS

Activities: Founder and President of the largest graduate group at JHU - Indian Graduate Student Association (IGSA), Johns Hopkins, (2022–now).

Memberships: IEEE, Upsilon Pi Epsilon, the national CS honor society.

Languages: English and Hindi (Native), Japanese and Indic languages (Punjabi, Bengali, Nepali, etc.), Japanese (Conversational), Mandarin Chinese and Korean (Beginner)

Miscellaneous Debating and Quizzing team captain (2008-2012) with multiple All India awards; Licensed Mountaineer (Mt. Bandarpunch, 21,000 feet (2010)), Scuba Diver and Marksman (India Pre-Nationals 2010-11)

Appendix

PUBLICATIONS

1. [EigenLoRAx: Recycling Adapters to Find Principal Subspaces for Resource-Efficient Adaptation and Inference](#), P Kaushik, A Vaidya, S Chaudhari, A Yuille, Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR) 2025, 649-659. [Project Page](#). Workshop **Oral**.
 - Media Coverage of this work - [In the World of AI, Who Speaks for the Trees?](#).
2. [Gaussian Scenes: Pose-Free Sparse-View Scene Reconstruction using Depth-Enhanced Diffusion Priors](#), S Paul, P Kaushik, A Yuille, Transactions on Machine Learning Research (TMLR) 2025. [Project Page](#)
3. [Source-Free and Image-Only Unsupervised Domain Adaptation for Category Level Object Pose Estimation](#), P Kaushik, A Mishra, A Kortylewski, A Yuille, International Conference on Learning Representations (ICLR) 2024.
4. [Understanding catastrophic forgetting and remembering in continual learning with optimal relevance mapping](#), P Kaushik, A Gain, A Kortylewski, A Yuille, 2021 Conference on Neural Information Processing Systems (NeurIPS) - W
5. [Scaling 3D Compositional Models for Robust Classification and Pose Estimation](#), P Kaushik*, X Yuan*, G Zhang*, A Jesslen, A Kortylewski, A Yuille, Proceedings of IEEE/CVF International Conference on Computer Vision (ICCV) 2025
6. [Progressive Prompt Detailing for Improved Alignment in Text-to-Image Generative Models](#), KS Saichandran, X Thomas, P Kaushik, D Ghadiyaram. Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR) 2025. Workshop **Oral**.
7. [inemo: Incremental neural mesh models for robust class-incremental learning](#), T Fischer, Y Liu, A Jesslen, N Ahmed, P Kaushik, A Wang, AL Yuille, ..., European conference on computer vision (ECCV), 357-374
8. [A Bayesian Approach to OOD Robustness in Image Classification](#), P Kaushik, A Kortylewski, A Yuille, The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024.
9. [Learning part segmentation from synthetic animals](#), J Peng, J He, P Kaushik, Z Xiao, J Mu, A Yuille. Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024
10. [Animal3d: A comprehensive dataset of 3d animal pose and shape](#). Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) 2023.
11. [Adaptive neural connections for sparsity learning](#), P Kaushik, A Gain, H Siegelmann, IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2020.
12. [Radar as a security measure-real time neural model based human detection and behaviour classification](#). P Kaushik. GlobalSIP 2019.
13. [Timing attack analysis on AES on modern processors](#). P Kaushik, R Majumdar. ICRITO 2017
14. [An Offline Outdoor Navigation System with Full Privacy](#). P Kaushik, V Saraswat, F Buccafurri, WINSYS, 95-101
15. [EigenLoRA: Recycle trained Adapters for Resource Efficient Adaptation and Inference](#). P Kaushik, A Mishra, A Vaidya, R Addanki, RA Rossi, A Nenkova, A Liu, ...
16. [DSpart: A Large-scale Diffusion-generated Synthetic Dataset with Annotations from 3D Parts](#). J Peng, Y Sun, J He, J Chen, P Kaushik, W Ma, Y Zhang, J Wang, A Wang, ...
17. [CIDA3D: Conformal Inference aided unsupervised Domain Adaptation for 3D-Aware Classification](#). P Kaushik, A Mishra, A Liu, A Kortylewski, A Yuille.