Deepika Vemuri

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Areas of Interest

Concept-based Learning, Interpretability, Logic and Neuro-Symbolic Reasoning, MLLM Reasoning

Education

IIT Hyderabad **Aug 2022 - Present**
PhD in Artificial Intelligence *CGPA:8.75/10*

University of Hyderabad **2020 - 2022**
M.Tech in Artificial Intelligence *CGPA:9.55/10*
Thesis Topic - "Distributed Fog Computing and Machine Learning"

BVRIT HYDERABAD College of Engineering for Women **2016-2020**
B.Tech in Computer Science and Engineering *CGPA:8.42/10*

Research Experience

- **Vector Research Intern** **Feb 2026**
  Supervisor: Dr. Kelsey Allen, University of British Columbia, Vancouver, Canada

Publications

- **Concept-Based Finetuning of MLLMs**, **Deepika Vemuri***, Sunayana Samavedam*, Vineeth N. Balasubramanian, PJ Narayanan, *Manuscript Under Preparation*
- **Formal Concept-Based Models**, **Deepika Vemuri**, Sayanta Adhikari, Ankit Saha, Vineeth N. Balasubramanian, *Under Review at an A* conference*
- **LogicCBMs: Using Logic to Enhance Concept-Based Learning**, **Deepika Vemuri**, Gautham Bellamkonda, Aditya Pola, Vineeth N. Balasubramanian, *Under Review at an A* conference*
- **Learning Hierarchically using Formal Concepts**, **Deepika Vemuri**, Sayanta Adhikari, Ankit Saha, Vineeth N. Balasubramanian, Accepted at Visual Concepts Workshop, CVPR 2025
- **Walking the Web of Concept-Class Relationships in Incrementally Trained Interpretable Models**, Susmit Agrawal, **Deepika Vemuri**, Sri Siddarth Chakaravarthy, Vineeth N. Balasubramanian, Accepted at AAAI 2025
- **Enhancing Concept-based Learning with Logic**, **Deepika Vemuri**, Gautham Bellamkonda, Vineeth N. Balasubramanian, Accepted at Differentiable Almost Everywhere and NextGenAISafety Workshops, ICML 2024

Achievements

- Distinguished Alumni Award - Excellence in Higher Education - 2024, BVRITH
- Prime Minister's Research Fellow(PMRF) - Direct Entry - Cycle 9, 2022
- Research Week with Google Participant - 2024, 2023, 2022 (Google Research India)
- TalentSprint Women Engineers Program (Supported by Google) - 2019

Leadership and Volunteering

- CVPR 2025, ECCV 2024 - Reviewer, CVPR 2024, IJCAI, ICLR 2023 - Subreviewer.
- Teaching: "Machine Learning Series of Lectures" course at BVRITH, Spring - 2023, 2024, Fall - 2024 and "The Math Behind ML" course at BVRITH, Spring 2025.
- ACML Student Volunteer - Was selected as one of the leads in the team responsible for virtual platform management, Dec 2022.
- Intern Mentor, UoH - Guided two interns for their summer internship where they worked on extensions to my M.Tech thesis work, June-July 2022.
- Student System Admin (2021-22), UoH - Underwent 10-day system admin training. Was selected as part of a 10 student system admin team after clearing an exam - Oct 2021.
- Section Lead - Stanford's Code In Place - 2020 - Selected to volunteer as part of the teaching team. Took weekly classes in a 5-week introductory programming course based on CS106A for a group of about 10 students, May 2020.

Relevant Coursework

Foundations of ML, Deep Learning, Neuromorphic Computing, Matrix Theory, Problem Solving Methods in AI, Knowledge Representation and Reasoning, Advanced Topics in Machine Learning.