Vedant Sanjaykumar Raval

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Education

University of Southern California (USC), Los Angeles, USA — Aug 2023 - Present
M.S in Computer Science. Advisor: Prof. Daniel Seita — *GPA:* ***4.00/4***

Indian Institute of Technology (IIT), Delhi, India — July 2017 - June 2021
B.Tech in Computer Science. Advisors: Prof. Parag Singla, Prof. Rahul Narain — *GPA:* ***9.05/10***

Publications and Patents

- **Vedant Raval***, Enyu Zhao*, Hejia Zhang, Stefanos Nikolaidis, and Daniel Seita. "GPT-Fabric: Folding and Smoothing Fabric by Leveraging Pre-Trained Foundation Models." arXiv Preprint, 2024. (* equal contribution)
- Sumit Shekhar, **Vedant Raval**, Tripti Shukla, Simarpreet Singh Saluja, Paridhi Maheshwari, and Divyam Gupta. "Template-based redesign of a document based on document content." U.S patent 11,537,787, granted Dec 27, 2022.
- Arnab Bhattacharyya, Sutanu Gayen, Saravanan Kandasamy, **Vedant Raval**, and Vinodchandran N. Variyam. "Efficient interventional distribution learning in the PAC framework." In *AISTATS'22*.

Work Experience

University of Southern California, Los Angeles, USA — Oct 2023 - Present
Graduate Research Assistant. Advisor: Prof. Daniel Seita

- Curating an open-source benchmark for evaluating the reasoning of the SOTA Vision-Language Models (VLMs) for low-level robot manipulation and designing experiments to demonstrate the correlation between performance on our benchmark versus performance in the real world when using the VLMs to select robot actions. Targeting *ICLR'25*.
- Developed *GPT-Fabric*, a novel method for robot fabric manipulation that leverages GPT for low-level decision-making, achieving state-of-the-art fabric smoothing results without needing a training dataset. Submitted to *ISRR'25*.

Adobe Systems, Bengaluru, India — July 2021 - July 2023
Software Development Engineer. Team: Document and Interop services for Adobe Express

- Created the service to create and open documents, incorporating performance optimizations like designing bulk APIs to parallelize resource downloads and devising a lazy document creation workflow to improve user experience.
- Automated the monitoring of our services by writing python modules to track client-side issues, highlight any upstream outages, and maintain JIRA using the obtained information, improving the team's productivity by 10%.
- Optimized the CircleCI E2E checks by writing a server that mocks the external APIs called by our services.

Indian Institute of Technology, Delhi, India — Sept 2020 - June 2021
Undergraduate Research Assistant. Advisor: Prof. Parag Singla

- Formulated a method to transfer semantic embeddings using IndoWordNet along with incorporating Stanza parse tokens for better dependency information, achieving up to 10% improvement in BLEU score for Transformer-based NMT.

Adobe Research, Bengaluru, India — April 2020 - July 2020
Undergraduate Research Intern. Advisor: Dr. Sumit Shekhar

- Designed a system to re-style documents based on templates recommended from layouts generated via Latent Space Interpolations along heuristically determined paths and devised a graph-matching approach for transferring content.

Relevant Coursework and technical skills

- **Graduate Courses** - Deep Learning for Robotic Manipulation*, Robotic Perception*, Artificial Intelligence, Machine Learning, Robotics, Analysis of Algorithms, Digital Image Analysis (* currently enrolled)
- **Languages and Tools** - Python, C++, MATLAB, PyTorch, Tensorflow, Sklearn, ROS, NodeJS, Kubernetes
- **Expertise** - VLMs, LLMs, Transformers, SAM, Machine Translation, mBART, EM algorithm, Keypoint Detection

Awards and Achievements

- **IIT Dean's Merit Award**: Awarded twice during my undergrad for being among the top 5 academic performers.
- **All India Rank 4** in Joint Entrance Examination (JEE) Main 2017 among 1.2 million students, scoring 345/360.