Nihal Jain

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EDUCATION

Carnegie Mellon University – School of Computer Science *Pittsburgh, PA*
Master of Science in Machine Learning | GPA: 4.08/4.0 *Dec 2022*

Birla Institute of Technology & Science (BITS), Pilani *Hyderabad, India*
Bachelor of Engineering in Computer Science | GPA: 9.94/10.0 *Jul 2021*

WORK EXPERIENCE

Amazon Web Services (AWS), AI Labs *New York, NY*
Applied Scientist Intern *May 2022 – Aug 2022*

- Implemented a setup for the distributed pretraining of large language models with **350M+** parameters on large datasets (BigQuery) with **4M+** examples using PyTorch Lightning, HuggingFace Transformers and Deepspeed
- Improved GPT-based decoder models (CodeGen) for code understanding and generation via contrastive learning

Adobe Research *Bangalore, India (Remote)*
Research Intern *Jan 2021 – Jul 2021*

- Designed a data-driven algorithm to perform multi-view similarity search given a collection of images
- Implemented a self-supervised deep learning pipeline trained on **~300K** images using PyTorch to obtain disentangled multi-view representations of images

Research Intern *May 2020 – Jul 2020*

- Developed GANs to generate color profiles conditioned on textual queries to improve image search performance
- Conceptualized an end-to-end deep learning pipeline for color-based image editing guided by textual input only

Indian Institute of Remote Sensing – Indian Space Research Organisation (ISRO) *Dehradun, India*
Research Intern *May 2019 – Jul 2019*

- Automated land cover classification of satellite imagery of Indian terrain sourced from ESA's Sentinel-1 satellite
- Implemented six CNN models for semantic segmentation of temporal satellite imagery using Keras

SELECTED PUBLICATIONS

- *Nihal Jain*, Praneetha Vaddamanu, Paridhi Maheshwari, Vishwa Vinay, Kuldeep Kulkarni. Self-supervised Multi-view Disentanglement for Expansion of Visual Collections. ACM International Conference on Web Search and Data Mining (WSDM). 2023. [Accepted]
- *Nihal Jain*, Praneetha Vaddamanu, Paridhi Maheshwari, Vishwa Vinay, Kuldeep Kulkarni. Inspiration Retrieval for Visual Exploration. In Machine Learning for Creativity and Design (NeurIPS 2021 Workshop). 2021. [Link]
- Paridhi Maheshwari, *Nihal Jain*, Praneetha Vaddamanu, Dhananjay Raut, Shraiysh Vaishay, and Vishwa Vinay. Generating Compositional Color Representations from Text. ACM International Conference on Information and Knowledge Management (CIKM). 2021. [Link]

PATENTS

- "Color Representations for Textual Phrases", U.S. Patent Application No. 17/111,819. Patented 2022/6/9. [Link]
- "Text Editing of Digital Images", U.S. Patent Application No. 17/079,844. Patented 2022/4/28. [Link]

PROJECTS

MultiViz: Visualizing and Understanding Multimodal Models [Link] *CMU | Jan 2022 – May 2022*

- Developed an interpretability framework for analyzing multimodal models by measuring unimodal importances, cross-modal interactions and prediction errors using methods like LIME and gradient analysis
- Designed a user-study to evaluate the effectiveness of insights provided from the framework on multimodal datasets

Semi-supervised 3D Human Pose Estimation [Link] *CMU | Jan 2022 – May 2022*

- Proposed a simple 3D human pose estimation framework that only relies on multi-view 2D supervision
- Achieved **11.6%** improvement over state-of-the-art methods using test-time adaptation on the HumanEva benchmark

SKILLS

Programming Languages: Python, C, C++, JavaScript, Java, Shell
Development Tools & Frameworks: PyTorch, Spark, PyTorch Lightning, Flask, Vue.js, React.js, Git

AWARDS & HONORS

Institute Gold Medal – BITS, Pilani *Aug 2021*

- Awarded a Gold Medal for having obtained first position among the class of ~1100 graduating students

KC Mahindra Scholarship for Post Graduate Studies Abroad – KC Mahindra Education Trust *Jul 2021*

- Awarded scholarship to pursue post-graduate studies abroad offered to ~50 out of > 1000 applicants