Hiresh Gupta

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Education

Carnegie Mellon University - School of Computer Science Pittsburgh, PA
Master of Science in Computer Vision - CGPA: 4.11/4.0 *Dec. 2022*
Coursework: Learning for 3D Vision, Visual Learning & Recognition, Computer Vision, Machine Learning

Birla Institute of Technology and Science, Pilani Pilani, India
Bachelor of Engineering in Computer Science - CGPA: 9.05/10 (passed with distinction) *May 2018*

Experience

Apple Cupertino, CA
Machine Learning Intern *May. 2022 - Aug. 2022*
- Worked with the 3D Vision team at Apple Maps to detect road features like lane markings, sidewalks, bike paths, etc.
- Incorporated satellite imagery as a new data source to segment road features and update road network information.

Adobe Systems Noida, India
Machine Learning Engineer-II *Jul. 2018 - Aug. 2021*
- Proposed and deployed a novel high-resolution segmentation method for hierarchical document structure extraction.
- Utilised conditional GANs to generate synthetic training data to address certain complex document layout patterns.
- Scaled deep-learning workloads to TPU pods to achieve a 15x speedup in throughput and a 10x speedup in training time.

Media and Data Science Research Lab, Adobe Noida, India
Computer Vision Research Intern *Jan. 2018 - Jul. 2018*
- Proposed a novel Visual Search mechanism for fashion apparel & accessories. The research was awarded the Best Paper Award at CVPR 2019 workshop on Fashion & Subjective search.

Academic Projects

Universal Face Model [Project Website]
Carnegie Mellon University, Advisor: Prof. Fernando De la Torre *Jan. 2022 - Present*
- Presented solutions for 3D Face Reconstruction from a single image & used StyleGAN to perform interactive face editing.
- Explored the use of Occupancy Networks to predict displacement maps and used ID-MRF loss to improve photo-realism.

MultiGAN Distillation [Project Website]
Carnegie Mellon University, Advisor: Prof. Deepak Pathak *Feb. 2022 - Apr. 2022*
- Analyzed training strategies for effective knowledge transfer from GANs to target domains with few images.
- Proposed solutions for data-efficient training of GANs and fusion of multiple pre-trained generators into one.

Publications

Document Structure Extraction using High Resolution Hierarchical Semantic Segmentation ECCV 2020
*M. Sarkar, **Hiresh Gupta***, M. Aggarwal*, A. Jain, B. Krishnamurthy* [PDF]

Multi-Modal Elements Association Approach for Form Structure Extraction WACV 2020
*M. Aggarwal, M. Sarkar, **Hiresh Gupta**, B. Krishnamurthy* [PDF]

Form2Seq : A Framework for Higher-Order Form Structure Extraction EMNLP 2020
*M. Aggarwal, **Hiresh Gupta**, M. Sarkar, B. Krishnamurthy* [PDF]

Powering Robust Fashion Retrieval With Information Rich Feature Embeddings CVPRW 2019
Hiresh Gupta, A. Chopra*, A. Sinha*, M. Sarkar*, B. Krishnamurthy* [PDF] [Poster] [Best Paper Award]

Patents

Digital Image Search Training using Aggregated Digital Images US 16/177,243

Methods for Exploring and Recommending Matching Products Across Categories US 16/417,373

Improving Performance of Neural Networks using Learned Specialized Transformation Functions US 16/534,856

Identifying Digital Attributes from Multiple Attribute Groups Within Target Digital Images Utilizing Deep Cognitive Attribution US 16/564,831

Skills

Programming Languages: Python, C/C++, Java, Scala
Frameworks & Libraries: Docker, Git, Pytorch, Pytorch3D, TensorFlow, OpenCV, Pandas, Jenkins