Gunjan Aggarwal

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Education

Georgia Institute of Technology — Atlanta, GA
Master of Science in Computer Science (Specialization: Machine Learning) | GPA - 4.0 — Aug. 2021 - May 2023

Birla Institute of Technology and Science Pilani — Pilani, India
Bachelor of Engineering (Hons.) in Computer Science — Aug. 2014 – July 2018

Research Interests

Computer Vision, Self-Supervised Learning, Multi-Modal AI, Embodied AI, Generative Models

Publications

ZSON: Zero-Shot Object-Goal Navigation using Multimodal Goal Embeddings (Paper) — NeurIPS 2022
Arjun Majumdar, Gunjan Aggarwal*, Bhavika Devnani, Judy Hoffman, Dhruv Batra*

- Proposed a zero-shot approach for object-goal navigation by encoding goal images into a multi-modal, semantic embedding space via CLIP.
- Achieved 4-20% improvement for object-goal navigation task over state-of-the-art methods.
- Showed the importance of using a self-supervised pre-trained visual encoder for zero-shot transfer.
- This work was also accepted as a Spotlight talk at CORL Pre-training Robot Learning(PRL) Workshop 2022.

Dance2Music: Automatic Dance-driven Music Generation (Paper) | (Project) — NeurIPS 2021 Workshop
Gunjan Aggarwal, Devi Parikh

- Used beam search to generate a paired dance and music dataset which was then used to train a deep neural network.

On the Benefits of Models with Perceptually-Aligned Gradients (Paper) — ICLR 2020 Workshop
Gunjan Aggarwal, Abhishek Sinha*, Nupur Kumari*, Mayank Singh**

- Showed the benefit of adversarially trained models for weakly supervised localization and zero-shot transfer learning.

Neuro-Symbolic Generative Art: A Preliminary Study (Paper) | (Project) — ICCC 2020
Gunjan Aggarwal, Devi Parikh

- Trained Progressive Generative Adversarial Network (GAN) over a symbolically generated dataset.

cFineGAN: Unsupervised multi-conditional fine-grained image generation (Paper) — NeurIPS 2019 Workshop
Gunjan Aggarwal, Abhishek Sinha**

- Developed an unsupervised multi-conditional image generation pipeline on top of a hierarchical GAN. The work was showcased live on stage at Adobe MAX Sneaks, 2019 in front of an audience of 15,000 people. Video link

Experience

Georgia Institute of Technology — Atlanta, GA
Graduate Researcher under Prof. Devi Parikh and Prof. Dhruv Batra — Aug 2021 – Present

- Working on problems related to multi-modal AI.

Adobe — San Jose, CA
ML Intern: Work under patent submission — May 2022 – Aug 2022

- Researched on adapting image based models to video domain for makeup transfer using unlabeled video data.
- Integrated video temporal consistency to create paired video data using video outputs from image based models.
- Incorporated Face Mesh to improve lip segmentation and trained Pix2Pix generative model and ConvGRU based recurrent model to achieve superior qualitative and quantitative performance (2.5% increase in color consistency).

Adobe — Noida, India
Machine Learning Engineer-2 — July 2018 – Aug 2021

- Worked on Adobe Conversational AI from scratch, designing in-house multilingual intent classifier by utilizing embedding from the Universal Sentence Encoder model. The chatbot is serving ∼20,000 customers daily.
- Applied HDBSCAN clustering on top of embeddings of low-confidence user utterances to identify new user intents.

Projects

Unsupervised Domain Adaptation: Used FixMatch consistency to achieve 4% improvement over the state-of-the-art approach for Unsupervised Domain Adaptation from SVHN to MNIST.

Achievements

Code Quality Jam Champion Award 2022, Adobe: Won this award across 20 intern teams, evaluated on the basis of our research, engineering and coding skills.
Special Contribution Award 2020, Adobe: Awarded for my contribution to Adobe Conversational AI, and to the research value of Adobe by publishing 3 works in Computer Vision. Awarded to only 4 employees yearly.
Code Jam to I/O for Women 2018, Google: Global Rank 27, got invited to attend Google I/O 2018.

Programming Skills

Languages: Python, C++, Java
Libraries: Pytorch, TensorFlow, OpenCV