Gunjan Aggarwal

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Present

Adobe | *Applied Research Scientist* San Jose, CA
Working on video generative models.

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

Embodiment Randomization for Cross Embodiment Navigation (Paper) IROS 2024
Gunjan Aggarwal, Pranav Putta*, Roozbeh Mottaghi, Dhruv Batra, Naoki Yokoyama, Joanne Truong, Arjun Majumdar*

- We present Embodiment Randomization, a simple, inexpensive, and intuitive technique for training robust behavior policies that can be transferred to multiple robot embodiments.

ZSON: Zero-Shot Object-Goal Navigation using Multimodal Goal Embeddings (Paper) NeurIPS 2022
Gunjan Aggarwal, Arjun Majumdar*, 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

Past Experience

Georgia Institute of Technology Atlanta, GA
Graduate Researcher under Prof. Devi Parikh and Prof. Dhruv Batra Aug 2021 – May 2023

- Working on problems related to multi-modal AI.

Adobe San Jose, CA
ML Intern 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.

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