Gunjan Aggarwal

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Google Scholar

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, Deep Learning, Natural Language Processing, Embodied AI, Multi-Modal AI

Publications

- **ZSON: Zero-Shot Object-Goal Navigation using Multimodal Goal Embeddings** — Paper link
  Under Review
  - 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.
- **Dance2Music: Automatic Dance-driven Music Generation** — Paper link
  NeurIPS 2021 Workshop: Machine Learning for Creativity and Design
  - Worked on generating music conditioned on dance in real-time.
  - Used beam search to generate a paired dance and music dataset which was then used to train a deep neural network. Dance frames were represented by poses obtained from OpenPose.
- **On the Benefits of Models with Perceptually-Aligned Gradients** — Paper link
  ICLR 2020 Workshop: Towards Trustworthy ML
  - Showed the benefit of using low-perturbation bound adversarially trained models for different tasks, such as weakly supervised object localization and zero-shot transfer learning.
- **Neuro-Symbolic Generative Art: A Preliminary Study** — Paper link
  ICCC 2020: Short Paper
  - Proposed a new genre of art: neuro-symbolic generative art.
  - A progressive GAN was trained over a symbolically generated dataset.
- **cFineGAN: Unsupervised multi-conditional fine-grained image generation** — Paper link
  NeurIPS 2019 Workshop: Machine Learning for Creativity and Design
  - Developed an unsupervised multi-conditional image generation pipeline on top of a hierarchical GAN. The work was showcased live on stage at Adobe MAX (Sneak Peek), 2019 in front of an audience of 15,000 people. Video link

Experience

- **Adobe** — San Jose, CA
  ML Intern: Project under patent submission — *May 2022 – Aug 2022*
  - Researched on adapting image based models to video domain via the use case of makeup transfer for video editing.
  - Integrated blind video temporal consistency to create paired video data using videos 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).
- **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** — Noida, India
  Software Development Engineer-2 — *July 2018 – Aug 2021*
  - Worked on Adobe Conversational AI from scratch, starting with Microsoft LUIS and Rasa, and moving on to designing in-house multi-lingual 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.
- **Text guided Image Editing**: Explored text based editing of real images using ICGAN and CLIP models.

Programming Skills

- **Languages**: Python, C++, Java — **Libraries**: Pytorch, TensorFlow, OpenCV