

Zizhao Hu

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SKILLS

- Research interest in **Generative Modeling, Multimodal Learning, Continual Learning**
- Proficient with **Pytorch, Tensorflow, Unity, Git, JAX, Docker**
- Strong background in **Math, Physics, Statistics**
- Programming Language: expertise in **Python and Java**, familiar with **C++, C, SQL, Javascript, HTML/CSS, Dart**

EDUCATION

University of Southern California

August 2020 - Now

- Ph.D. candidate in Computer Science
- Master of Science in Computer Science GPA: 3.81 / 4.0
- Key courses/concepts: **Machine Learning, Artificial Intelligence, Generative Modeling, Continual Learning, Computer Vision, Natural Language Processing, Online Optimization**

Georgia Institute Of Technology

August 2016 - May 2020

- Bachelor of Science in Physics GPA: 3.8 / 4.0
- Key courses/concepts: **Statistical Mechanics, Thermodynamics, Computational Physics, Quantum Mechanics, Quantum Computing, Database**

EXPERIENCE

USC Information Science Institute | Researcher

February 2022 - Now

- Conducted supervised research in implementing and improving **Generative Models** such as **Score-based Diffusion Models, GAN, and VAE**, in solving **multimodal generation**, and **continual learning**.

USC iLab | Research Assistant

February 2021 - February 2022

- Designed **reinforcement learning** algorithms for **OOD detection** tasks in fully autonomous settings.

Georgia Tech AI-based Nanostructure Design | Research Assistant

August 2019 - May 2020

- Designed **Latent Space Models** to reverse-design nanomaterials such as metasurfaces. It automates the traditional exhaustive searching approach in the field of optical material design.

Georgia Tech Agile System Lab | Research Assistant

Dec 2017 - May 2018

- Conducted wind tunnel test and physical analysis on animal flight(Hawk Moth).
- Integrated **Computer Vision** algorithms to automate the data processing pipeline.

Publications

- **Efficient Multimodal Diffusion Models Using Joint Data Infilling with Partially Shared U-Net(2023)**
- **Encoding Binary Concepts in the Latent Space of Generative Models for Enhancing Data Representation(2023)**
- **Cognitively Inspired Cross-Modal Data Generation Using Diffusion Models(2023)**
- **GalilAI: Out-of-Task Distribution Detection using Causal Active Experimentation for Safe Transfer RL(2022)** AISTATS 2022
- **Evaluating NLP Systems On a Novel Cloze Task: Judging the Plausibility of Possible Fillers in Instructional Texts**
- **Rapid frequency modulation in a resonant system: aerial perturbation recovery in hawkmoths(2022)** Proceedings of the Royal Society

LEADERSHIP & INVOLVEMENT

Project Supervisor - Georgia Tech & University of Southern California

August 2018 - Now

- Supervised **1000+** students on Deep Learning projects spanning **CV** and **NLP**
- Guest speakers to present research projects to **1000+** students

Joyce M. and Glenn A. Burdick Prize (2018) Georgia Tech

April - 2018

- Awarded to 2 students each year, who demonstrated scholastic achievement and leadership in the College of Science, Georgia Tech