

Vignesh Gokul

Research Statement

Teaching Statement

Diversity Statement

Website

☎(858) 952-2855

EDUCATION

University of California, San Diego, San Diego, USA

Ph.D, in Computer Science

Sep. 2017 – Present.

- Doctoral candidate advised by Dr. Shlomo Dubnov and Dr. Manmohan Chandraker. My research mainly focuses on deep learning for content generation(music/video). I am interested in developing generative models for cross-domain translation and spatio-temporal data. My research also focuses on privacy and ethics for synthetic data.
- Doctoral Award for Excellence in Service and Leadership; Masters Award for Excellence in Teaching; Teaching Assistant for CSE 291I (Machine Learning for 3D Data), CSE 258 (Recommender Systems) and CSE 193 (Introduction to Research).

Anna University, Chennai, India

Bachelor of Engineering in Computer Science

Sep. 2013 – Sep. 2017

- Dean's Award for Academic Excellence (Full-Tuition Scholarship)
 - GPA: 8.84/10; University Rank: 24 among 16449 students
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EXPERIENCE

NEON, Samsung Research America,

Research Scientist Intern

October. 2022 – August. 2023

- Worked on video generative models for photo-realistic digital humans.
- Developeped a video frame interpolation system and a few-shot video-to-video generation framework.

Adobe Inc.,

Machine Learning Research Intern

June. 2021 – September. 2021

- Worked on generative models for depth estimation and novel view synthesis. Our proposed method leverages multi-view depth maps/images of a scene to improve output depth map quality.

Unity Technologies,

Machine Learning Research Intern

June. 2020 – September. 2020

- Developed a single image generative adversarial network (GANs) that can synthesize textures of different sizes and variations using a single image as training data. The proposed framework was used to generate synthetic data for training machine learning models and also helped technical artists create a variety of assets.

CRXEL Lab, UC San Diego

Research Assistant, Computer Vision

March. 2018 – Present.

- Invented a novel algorithm SymTE to switch between generative models based on musical input for unsupervised music improvisation. (Physical Sciences Forum)
 - Developed a novel algorithm using Variable Markov Oracle for video-to-video synthesis/video chat bot. In our work, the model is able to synthesise improvisations of one agent's motion, in response to another agent. (IEEE MIPR 2019)
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PUBLICATIONS

PosCUDA: Position based Convolutions for Unlearnable audio Datasets

In submission

Switching Machine Improvisation Models by Latent Transfer Entropy Criteria

Physical Sciences Forum 2022

FedLTN: Federated Learning for Sparse and Personalized Lottery Ticket Networks

ECCV 2022

Creative Improvised Interaction with Generative Musical Systems

IEEE MIPR 2022

Bias-Free FedGAN: A Federated Approach to Generate Bias-Free Datasets

Preprint

DPD-InfoGAN : Differentially Private Distributed InfoGAN

EuroMLSys 2020

Semantic Interaction with Human Motion using Query-Based Recombinant Video Synthesis

IEEE MIPR 2019

Deep Q-Learning for Home Automation

IJCA

PATENTS

Low-cost responsive video cached system for effective interaction with digital humans *U.S. Provisional Patent Application Serial No. 63/453,999*

Cached Interactive System for Cost-Effective dialog interaction with digital assistants *U.S. Provisional Patent Application Serial No. 63/453,825*

MENTORING EXPERIENCE

Early Research Scholars Program, UC San Diego

Research Mentor

Sep. 2018 – Sept. 2021

- Research Mentor for 42 groups (150 students), as a part of a NSF funded program to expose students to research opportunities. Students work in groups of 4 for three academic quarters under the guidance of a faculty member in the CS department on their own research project. This involves submitting a research proposal at the end of the first quarter, implementing and evaluating it in the next two quarters, and presenting a poster at the end of the academic year. (Reviews 2020)(Reviews 2019)(Reviews 2018)

Google Explore CSR, UC San Diego

Co-Organizer

October. 2019 – May. 2020

- Co-organizing Google's Explore CSR program at UC San Diego; a program that provides exposure to Computer Science research for students belonging to underrepresented minorities.
- Conducted a workshop on Neural Networks and Tensorflow 2.0.

CSE 258: Recommender Systems and Web Mining

Reviews

CSE 194: Race, Gender and Computing

Reviews

CSE 231: Advanced Compiler Design

Reviews

CSE 291: Machine Learning for 3D Data

Reviews

PROJECTS

Generating Videos with Scene Dynamics : Developed a 3D convolutional GAN with two streams (background and foreground), to generate naturalistic videos, using Tensorflow, on the MPII Cooking Activities Dataset.

Fashion GAN : Developed a Siamese GAN to generate images of products, that the user would likely buy. For example, the system was able to generate images of shirts, based on the user's personalized sense of fashion, given the previous image of trousers that the user bought in the previous transactions.

AWARDS

Doctoral Award for Service and Leadership

UC San Diego, 2020

Masters Award for Excellence in Teaching

UC San Diego, 2018

Dean's Award for Academic Excellence

Anna University, 2013-2016