Girish Chandar G
Master of Science
Electrical and Computer Engineering (Computer Vision)
University of Michigan - Ann Arbor

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Education

Degree	Institute	GPA/%	Year
M.S	University of Michigan - Ann Arbor	4/4	2023
B.Tech	Indian Institute of Technology Gandhinagar	8.98/10	2020

Positions

- **Research Assistant**, Architecture and Artificial Intelligence Laboratory. *September 2021 - Present*
- **Research Intern**, Zentron Labs *September 2020 - August 2021*

Industrial Internships

- ***Auto Shape Detection in Machine Vision, R&D,*** Zentron Labs *September 2020 - August 2021*
  - Implemented an algorithm to detect arcs in the parts with an accuracy of 100% for simulated part images and 80% for actual part images. The algorithm gives a 100% precision for both simulated and actual part images.
  - Integrated existing LabVIEW programs for Circle and Line Detection with python by creating DLLs.

Academic Internships

- ***Optimization based Inverse Rendering, University of Texas at Dallas, TX, USA*** *May 2019-July 2019*
  Advisor: Dr. Xiaohu Guo, Professor, Deparment of Computer Science [GitHub]
  - Implemented an algorithm to address the problem of dense 3D face reconstruction from a single 2D image for text/speech to facial expression conversion.
  - Implementation done on PyTorch, MXNet and Numpy and the code open sourced in GitHub.
- ***Microscopic Image Analysis, Micro and Nano Fluids Lab, Clemson University, SC, USA*** *May 2018-July 2018*
  Advisor: Dr. Konstantin G Kornev, Professor, Deparment of Materials Science and Engineering [GitHub]
  - Primarily developed LabView scripts for analyzing images from Magnetic Rotational Spectroscopy (MRS) experiment.
  - Developed a generic script for microscopic image analysis in LabView that can be extended to cater various needs of different experiments.

Research Projects

- ***Forensic Camera Model Classification using Local Binary Pattern*** *January 2018 - April 2018*
  Advisor: Dr. Nitin Khanna, Assistant Professor, Department of Electrical Engineering
  - Implemented one vs all machine learning model in MATLAB to classify the images based on the type of source camera by leveraging the Local Binary Pattern(LBP) features.
  - Created dataset of images, taken from different types and models of phones to train our model.

Projects

- ***Co-Tuning for Transfer Learning on TACO Dataset*** *September 2021 - Decemeber 2021*
  Advisor: Dr. Clayton Scott, Professor, Electrical Engineering and Computer Science Department [GitHub]
  - Implemented and verified the algorithm proposed in the paper "Co-tuning for Transfer Learning" on TACO (Trash Annotations in Context) dataset.
  - First team to work with Co-tuning on TACO dataset.

- ***Patch based Multi-View Stereopsis*** *January 2020 - April 2020*
  Advisor: Dr. Shanmuganathan Raman, Associate Professor, Department of Electrical Engineering [GitHub]
  - Implemenetation of the algorithm proposed by Furukawa et al, titled "Accurate, Dense and Robust Multi-View Stereopsis".
  - Develop a 3D scene from multi-view stereo images without an apriori mesh model.
- ***Classfication of Cancer Progression by Structuring Clinical Data*** *August 2019 - December 2019*
  Advisor: Dr. Mayank Singh, Assistant Professor, Department of Computer Science Engineering
  - Developed a novel model to predict the probability of cancer by structuring Electronic Health Records using Natural Language Processing techniques.
  - Explored MIMIC-III dataset extensively and verified its potential to be used for cancer prediction.
  - Implemented the model in Keras Tensorflow by structuring the clinical data using CliNER, and BioBERT embedding.
- ***Unsupervised Cross-Domain Image Transfer using GAN*** *January 2019 - April 2019*
  Advisor: Dr. Nipun Batra, Assistant Professor, Department of Computer Science Engineering [GitHub]
  - Generated images in the domain of MNIST and Bitmoji by the method of style transfer from the domain of SVHN dataset and MS-Celeb dataset respectively.
  - Implemented modified Generative Adverserial Network to achieve domain transfer in unsupervised manner.
- ***Acoustics 3-D Sound Source Localization*** *January 2019 - February 2019*
  (IEEE Signal Processing Cup 2019)
  Advisor: Dr. Nithin V. George, Associate Professor, Department of Electrical Engineering
  - Developed an algorithm to determine the azimuth angle and elevation of the direction of the sound source based on the data received from 8 microphones mounted on a drone.
  - Implemented available models on 3D sound source localization to verify its performance on the task assigned.
  - Designed an 8 microphone array to mimic the the test setup of the competition and created our own dataset to test the robustness of our algorithm.

Research Interests and Relevant Courses

- **Research Interests:** Computer Vision, Computer Graphics, Image Processing, Machine Learning,
- **Relevant Courses:** 3D Computer Vision, Mathematical Foundation for Computer Vision and Graphics, Machine Learning, Digital Image Processing, Probability and Random Processes, Natural Language Processing, Signals and Systems.

Skills

- **Languages:-** Python, C and C++, Verilog(VDHL)
- **Python Libraries:-** PyTorch, Keras, Tensorflow, Scikit-learn, MXNet, Pandas, Numpy, Django
- **Softwares/Tools:-** MATLAB, LabView, Arduino, Mathematica*(Basics)*

Academic Achievements

- Secured **Highest Grade** awarded in the following courses: Matrix Methods for Signal Processing and Machine Learning (A+: 4.3/4), Machine Learning (A: 4/4), Digital Image Processing (A: 10/10), Digital Signal Processing (A: 10/10), Mathematical Foundation for Computer Vision and Graphics (A: 10/10), and Probability and Random Processes (A-: 9/10).
- Dean's List Awardee for five semesters in my undergraduate degree; awarded by the institute for **outstanding performance** in each semester.