

## Girish Chandar G

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

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[Personal Webpage](#)  
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### Education

Degree	Institute	CPI/%	Year
B.Tech	Indian Institute of Technology Gandhinagar	8.98/10	2020
Class XII	Suguna PIP School	93.6 %	2016
Class X	PSG Public Schools	10/10	2014

### 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)
- **Operating Systems:-** Windows, Linux, MacOS

### 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
  - Member of a research project that aims at designing an machine for automatic shape detection to be used to measure and verify the dimensions of industrial parts.
  - 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, Department 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.
  - Learnt how to critically analyse a research paper and developed Numpy and PyTorch implementation based on previous research papers.
- **Microscopic Image Analysis, Micro and Nano Fluids Lab, Clemson University, SC, USA** May 2018-July 2018  
Advisor: [Dr. Konstantin G Kornev](#), Professor, Department 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.
  - Demonstrated the versatility of the LabView scripts by applying them in the experiments of graduate students.

### 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 an algorithm to classify images based on the type of source camera.
  - Implemented one vs all machine learning model in MATLAB to classify the images based on the Local Binary Pattern(LBP) features.
  - Created dataset of images, taken from different types and models of phones to train our model.

## Projects

- **Patch based Multi-View Stereopsis** January 2020 - April 2020  
 Advisor: [Dr. Shanmuganathan Raman](#), Associate Professor, Department of Electrical Engineering [[GitHub](#)]
  - Implementation 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.
- **Classification 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 Adversarial 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 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.

## Academic Achievements

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