S. Deepak Narayanan

Third Year Undergraduate
Computer Science and Engineering
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Research Interests: Machine Learning, Social Network Mining and Analysis, Computer Vision

Education

Degree	Institution	CPI / %	Year
B.Tech	Indian Institute of Technology Gandhinagar	9.55/10*	2016 - Present
Class XII	Maharishi Vidya Mandir School	96.80 %	2016
Class X	DAV Senior Secondary School	10/10	2014

* - At the end of four semesters

Internships

- **A study on local methods for estimating the shell index in social networks**
  Summer Research Fellow at Indian Institute of Technology Ropar — Summer 2018
  - Summer Research Fellow under the Science Academies' Summer Research Fellowship Program
  - Broad Topics of work included study of core-periphery structure of networks, shell index and its importance, node influence and design of approximation algorithms using local search techniques.

Projects

- **Scalable air quality estimation using multi-modal data** — August 2018 - Present
  Research Project, Guide: *Prof. Nipun Batra*
  - This supervised research project is aimed at solving three major problems - filling the gaps in data availability, predicting anamolies in sensor data readings and choosing locations to install new air quality monitoring stations in the Indian Context.
  - We solve these problems by estimating fine spatial and temporal resolution PM2.5 using Machine Learning by integrating data from air quality monitoring stations, satellites and weather stations.
- **Content Aware Rotation** — Fall 2018
  Course Project, *3D Computer Vision*
  - Implemented a warping based optimization method to rotate slightly tilted images while preserving image integrity and content, unlike a usual rotation, which causes loss in image content due to cropping.
  - This project is based on the *ICCV 2013* paper "Content Aware Rotation" by Kaiming He et al. The code is here and the paper is here.
- **Why do products receive bad reviews ?** — Fall 2018- Present
  Course Project, *Natural Language Processing*

  - Performed aspect based sentiment analysis on product review data on Amazon by implementing a novel method.
  - Performed feature extraction and aspect based sentiment analysis and assigned sentiment scores to each aspect for every review.

- **A finite context and stride based value predictor** Spring 2018
  Course Project, *Computer Architecture and Organization*
  - Implemented a Value Predictor based on the Framework provided by the Championship Value Prediction Committee, of *ISCA 2018*.
  - Got an improvement of the geometric mean of the IPCs to **2.55** on the provided traces for integer workloads. The contest page is here and the code can be found here.

- **CORDIC Processor** Fall 2017
  Course Project, *Digital Systems*
  - Implemented a CORDIC Processor using the CORDIC Algorithm on Digilent Basys 2 FPGA. The hardware description language used was Verilog.
  - Achieved a very high accuracy in the estimation of sine and cosine with an error of less than **1 %**.

Key Scholastic Achievements

- Featured in the **Dean's List** for **Academic Excellence** in all the semesters thus far at IIT Gandhinagar.
- Secured **A+** grade in the course **Linear Algebra and Differential Equations**. This grade is awarded as a mark of excellence.
- Recipient of the prestigious **NTSE** Scholarship, by the **NCERT**, Govt. of India, since 2014.
- Was selected for the **KVPY** Fellowship, by the **Indian Institute of Science, Bangalore** in 2016.

Skills
Programming Languages and Software - C, C++, Python, LaTeX, Verilog, MATLAB

Extra-curricular Activities

- Have performed in more than 30 concerts playing the Violin for Indian Classical Music.
- Coordinator of Conclave of Amalthea, IIT Gandhinagar's Technical Summit (April '17 - November '17)
- Member of the founding team of PyData Gandhinagar since August 2018.