Skand Vishwanath Peri

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Education

B.Tech in Computer Science and Engineering, 2014 - 2018 Expected
Indian Institute of Technology, Ropar, India

Internships

HDR Deghosting *Work Under Submission* Summer, 2017
Mentored by Dr R.Venkatesh Babu, Dept. of Computational and Data Sciences, IISc Bangalore, India

- Trained a deep neural network model for generating HDR images from LDR images.
- Also a deep model was proposed for the registration of images in varying illumination.

Mathematical Visual Simulators, Summer, 2016
Mentored by Dr C.K.Narayanan, Dept. of CS, IIT Ropar
Developed a GUI version of Singular Value Decomposition, Gradient Descent and Lagrange Multipliers depicting their geometrical interpretation. Chart.js, Plotly.js, Numeric.js and Algebra.js libraries were used to develop the tool.

Projects

Alzhemizer's Classification using MRI and PET images *Under Submission* Aug - Dec, 2017
Mentored by Dr Deepti.R.Bhatula, Dept. of Computer Science, IIT Ropar
In this work a localised deep neural net based architecture with 3D Convolution to predict if the has Alzhemizer's Disease using PET/MRI scans of the person's brain was proposed. Also a joint architecture (MRI + PET) was proposed in order to perform cross-model classification.

Personality Assessment from Videos *Under Submission* Aug - Dec, 2017
Mentored by Dr Abhinav Dhall, Dept. of Computer Science, IIT Ropar
The main aim of this project was to assess the Big 5 personality traits from videos. We came up with a novel approach in which we could regress the 5 traits using the background as well as the facial features.

Detecting Distracted Vehicle Drivers December, 2016 - January, 2017
Mentored by Dr C.K.Narayanan, Dept. of Computer Science, IIT Ropar
This project aims to predict if the driver is distracted while driving the vehicle. This project prominently uses Computer Vision and Convolution Neural Networks. Keras with tensorflow as backend has been used to run the model

Android Application for RNA Logistics, Noida, India June, 2016 - July, 2016
Built an android application for real time tracking of trucks. Developed the driver end application and used Google Maps API for navigation and worked with JSON to recieve requests from server end.

Database Storage of data received from Sensors Dec, 2015
Mentored by Dr C.K.Narayanan, Dept. of CS, IIT Ropar
This project aims to receive Data from sensors via Socket Programming and store it in MySQL Database which is further used as a training dataset for machine learning algorithm. This was implemented with the help of Queue data structure and Java Database Connectivity (JDBC) and no loss in data was ensured.

Technical Skills

Research Interests - Heterogenous Face Recognition, Cross Modal generative models, Computational Photography, Machine Learning, Deep Learning,
Languages - C, Python, Java, C++, PHP, MATLAB.
Tools/Frameworks - Pytorch, Keras, Lasagne, Theano, MySQL, SQLite, OpenGL, OpenCV, Android.

Other Projects

1.**Auto detection challenge** November, 2017
The aim of this task was to detect auto-rickshaws in images and give the bounding box as the output. A simple MLP with 4 layers was trained on HOG features of patches extracted from positive and negative class.

2. **CT Reconstruction Algorithms - ART, SART, Back Projection and Filtered Back Projection** October, 2017
In this work, I have implemented different Computed Tomography (CT) reconstruction algorithms. Majorly CT reconstructions involve 2 methods, Algebraic Reconstruction Algorithms and Back Projection Algorithms. I have implemented 2 variants of the first one [ART and SART] and 3 variants of the second one [simple BP and Filtered BP, Noise Filtered BP].

3. **Nonlocal Means-Based Speckle Filtering for Ultrasound Images** September, 2017
In this project I implemented non local means based noise filtering for ultrasound images. This algorithm is specific to ultrasound speckle noise. The paper proposed a new similarity metric : Pearson Distance.

4.**Visual Bag of Words & Homography Estimation** September, 2017
Visual bag of words on the Fashion MNIST data set was implemented using k-means clustering. Also Mosaic was created using homography estimation(projective transformation), warping and then blending of the images. The technical report of this can be found here.

5.**Creating Collage using Hybrid Images** August, 2017
Used the concept of Hybrid Images to create a collage of various images. The technical report of this can be found here.

5.**Door Lock System using Zigbee Protocol** March, 2017
Used the Zigbee protocol and Arduino in order to make a door locking system. This project was a part of the Computer Networks course.

6.**Image Morphing** Nov, 2016
We morphed 2 images by using Delaunay Triangulation technique. We take the tie points as input from the user and then compute the affine transformation from one image to the other and then blend the two images to get a smooth transition from one image to the other. This process can be perfomed with multiple images (we have performed it with 2 and 3 images).

7. **Finding Quality of Life Index** Feb, 2016
Used Fuzzy Relation Database in order to find the Quality of life index of a city. Various factors that would affect the life index were found and an algorithm in order to consider the fuzziness involved in the factors and compute the index was developed.

Scores, Achievements, Scholarships

1. Current Head of Coding Club, IIT Ropar.
2. City Head of BloodConnect (NGO) from 2015 to 2016 January.
3. Member of Team Kshitij (Annual Magazine of IIT Ropar) from 2014 to 2015 June.
4. Secured AIR 2084 in IIT JEE 2014 (among the top 0.5% students).
5. Selected for prestigious *Kishore Vaigyanik Protsahan Yojana* Fellowship (among top 2% of the students).
6. Intermediate/+2 (Board of Intermediate Education, Andhra Pradesh): 96.7 percent.
7. Matriculation (All India Secondary School Examination): CGPA 10/10.