Deepayan Bardhan

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EDUCATION

North Carolina State University, Raleigh, NC — May 2020
Master of Science, Electrical and Computer Engineering — GPA – 3.815/4
Coursework: Digital Imaging Systems | Computer Vision | Neural Networks | Random Processes
Design and Analysis of Algorithms | Pattern Recognition | Object Orientated Design & Dev

Indian Institute of Engineering Science and Technology, Kolkata, India — April 2018
Bachelor of Technology, Electrical Engineering — GPA - 8.51/10

PROJECTS

Counting lane changes by cars

- Using PyTorch built network to find the total number of cars changing lanes from a provided GoPro and Drone feed
- Used Convolution Neural Network (CNN) model to detect cars and separate shadows from them
- Compared the performance with an industrial software (Camlytics) and achieved better performance

Pattern Recognition Using Mixture Models

- Separated Textures in an image using EM (Expectation maximization) algorithm over various statistical models such as Gaussian model, mixture of Gaussian, T-models, Factor Analyzer.

Blob Detection

- Formed the scale space/ Gaussian pyramid of the given image using Difference of Gaussian (DoG)
- Detected blobs using the technique of Non-Maxima Suppression (NMS) to find interest points from the gaussian pyramid (as used in SIFT key-point detectors)

Body Rocking Behavior Recognition

- Inertial measurements from wearable sensors were recorded from a blind subject which were processed through CNN and CNN+LSTM based model and was used for determining the state of the subject under consideration

2D model depth estimation

- Built an auto-encoder model to generate 2D depth images with depth information only using detailed 2D images
- Generated the training set to train the auto-encoder model, involving 2D images and their corresponding depth images

Time series Demand Forecasting

- Forecasted hourly electric energy consumption for NY-ISO over a 2-weeks period using multivariate linear regression model trained over 3 years of energy and weather data with python's scikit-learn

Hand Written Digit Recognition

- Built a neural network model to classify the millions of handwritten digits
- Used Keras models to classify the digits after closely analyzing various features.
- Achieved an accuracy of 99.4 %

Built a library database system with MVC architecture using RoR

- Built a database system for library from scratch using Ruby on Rails(RoR) with OOPs concept.
- Used Model-View-Controller architecture for the design of the library database
- Wrote unit tests using Cucumber for the views and the models.
- Used AGILE process and SCRUM framework for development for the database.

TECHNICAL SKILLS

Languages:	Python, C++, Java, MATLAB, R
Framework:	Numpy, Pandas, OpenCV, PyTorch, Scikit-Learn, Scipy, Tensorflow, Keras, Flask, Tkinter, Hadoop, ROS, SLAM
github:	github.com/deepayanbardhan

Member of IoT Lab of NCSU

ACHIEVEMENTS

'Robo-soccer' runners up at Indian Institute of Technology (IIT) Kharagpur, an image processing-based soccer match played by programmable bots for the movements after processing of the bird's eye view image feed provided by a camera.

Ranked 1st in ACM-ICPC (Association for Computing Machinery – International Collegiate Programming Contest) 2016-17 from College and 275th rank holder in India finals, organized at Kerala, India.