Deepayan Bardhan

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EDUCATION

North Carolina State University, Raleigh, NC — May 2020
Master of Science, Electrical and Computer Engineering — GPA – 3.833/4
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

Face Detection Using Generative modeling

- Distinguished faces from non-face images 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

Automatic Vetting System

- Built an automatic vetting system using Amazon Web Services (AWS).
- Collected information from Alexa using Natural Language Processing (NLP) using Amazon Polly and Amazon Transcribe and also using Microsoft Azure Chatbot service to automate the process which was used to security testing purposes.

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
Framework:	OpenCV, PyTorch, Scikit-Learn, Tensorflow, Numpy, Pandas, Keras, Scipy, 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.