Prajwal Bende

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EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR
Dual Degree (B.Tech + M.Tech) in Electrical Engineering
Expected July 2021
Cum. GPA: 7.88 / 10 (till 6th Semester)

Senior Secondary School Exam
Maharashtra State Board | April 2016
Score: 94%

Secondary School Exam
Maharashtra State Board | April 2014
Score: 96.4%

COURSEWORK

- Programming and Data structures
- Computer Architecture and OS
- Signals and networks
- Digital Signal Processing*
- Analog Signal Processing*
- Transform calculus
- Matrix Algebra
- Probability and Stochastic processes
- Deep Learning: Foundations and Applications

ONLINE COURSES

- Deep Learning A-Z: Hands on Artificial Neural Networks
- Python for Data Science and Machine Learning Bootcamp
- Mathematics for Machine Learning

SKILLS

PROGRAMMING

- Python • R
- MATLAB • C/C++

PLATFORMS AND SOFTWARES

- Windows 7/8/10 • Linux
- Android Studio • SolidWorks • Spyder

LINKS

LinkedIn
Github

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*ongoing courses

RESEARCH EXPERIENCE

ECOLOGY | Infestation Modelling | Research Internship
Alberta Machine Intelligence Institute | Dr. Russell Greiner
University of Alberta, CA | May 2019 - July 2019

- Proposed a new architecture of HMM named "TreeHMM", an amalgamation of HMM and Polytrees, to model the infestation of Whirling Disease through Oldman River in Alberta
- Used "Noisy OR" technique to account for probability of transitioning from multiple states to single state
- Created an R library for graphical HMM models coupled with Naive Bayes and Tree Augmented Naive Bayes (TAN)
- Improved upon classical models like Naive Bayes and TAN getting an AUC score of 0.91

BIOMEDICAL SIGNAL PROCESSING | Health Smart-wear
Froot Research | Remote Internship | May 2018 - ongoing

- Working on developing a smart wearable device which could predict possible diseases using physiological features like ECG, pulse(PPG) and skin galvanic response
- Pre-processed the time series data using various signal processing techniques like filtering and anomaly detection/correction
- Extracted significant features from time series using mathematical and statistical models succeeded by a predictive model
- Recently signed an MoU with leading pharmaceutical company, Amicures Research, to collaborate on healthcare research

COMPUTER VISION | Deep Learning | Soil Science
Prof. Somsubhra Chakraborty| IIT KGP | Sept 2018 - Nov 2018

- Applied computer vision and deep learning algorithms to predict soil organic carbon percent from mobile camera captured images
- Implemented CNN regression algorithm along with image augmentation which gave significant R-squared value of 81 percent
- Used time series analysis techniques to relevant information from VNIR spectrograms of soil samples

DEEP LEARNING | Speech Processing | Remote Internship
Speech Communication Lab | Dr. Carol Espy-Wilson
University of Maryland, USA | June - July 2018

- Worked on predicting PHQ-8 depression scores from speech data based on Audio/Visual Emotion Challenge and Workshop (AVEC 2017) Depression challenge
- Modelled a predictive regressor using various Machine learning techniques (Random Forest, ANN, CNN etc.) using COVAREP speech features and audio spectrograms
- Improved the baseline model obtaining RMSE of 6.46 as opposed to baseline RMSE of 7.78, using a CNN regressor based model.