Vasanth Reddy

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EDUCATION

Virginia Tech, *National Capital Region, VA*
Masters in Computer Science *Aug. 2019 – Dec. 2020*
GPA: 3.6 / 4.0

Courses: Reinforcement Learning, Robotics, Deep Learning, Network Science, Machine Learning, Database Management, Urban Computing

National Institute of Technology, Jaipur, *Rajasthan, India*
Bachelors of Technology in Electrical Engineering *July. 2015 – May. 2019*
GPA: 7.02 / 10.00

Courses: Data Analytics, Signal Processing, Intelligent Systems and Control, Electric Drives and Control

SKILLS

Machine Learning: Generalized Linear Models, Dimensionality Reduction, Neural Networks, and Ensemble Methods, Computer Vision.
Deep Learning: Convolutional Neural Networks,LSTM, Deep Auto-encoders, GAN models
Reinforcement Learning: Sample-based learning, Deep-Q learning, TD learning
Robotics: Autonomous Control, Perception, Estimation and Planning, SLAM
Programming: Python, Java, R, MATLAB.
Front-End: flask, jinja2, Django, HTML, CSS.
Data Science: sklearn, Data mining, Data visualisation, SQL, Hadoop.
ML Platform: Tensorflow, keras, Pytorch.
Platform: Linux, Windows, Windows Azure.

PUBLICATIONS

[1] **Vasanth Reddy**, S. Verma, K. Verma, and R. Kumar. **"Hybrid Approach for Short term Wind Power Forecasting"**. IEEE 9th International Conference on Computing, Communication, and Networking 2018 - IISc Banglore, India, Published, July 2018.

[2] S. Verma, **Vasanth Reddy**, K. Verma, and R. Kumar. **"Markov Markov Models based Approach Short Term Forecasting of Wind Speed for Estimating Day-Ahead Wind Power"** . International Conference on Power, Energy, Control Transmission Systems 2018 - Chennai, India, Published,Feb 2018.

WORK EXPERIENCE

Department of Science and Technology, *Jaipur, India*
Student Research Assistant *Oct. 2017 – May. 2018*

- The Main objective of the project is to forecast accurate short term wind energy using predicted wind speed is therefore important for optimal scheduling of the wind farms
- We have extracted wind speed data from an weather API, loaded into database and further used SQL queries to call the required data. In order to filter the raw data, we have used Wavelet transformation to smooth the wind speed through out the years.
- Used Sequential Machine learning model as in Hidden Markov model to predict the wind speed for the next 24 hours. We achieved an accuracy of 78%, which outranked other machine learning algorithm score.
- To increase the accuracy we further used Recurrent Neural Networks and Long Short Term Models(LSTM). With the little transformation in data and using regularisation method, we achieved an error of 2% and successfully estimated the wind power energy.

RESEARCH PROJECTS

Meta-heuristic Optimisation
Guide: Dr. Rajesh Kumar, Jaipur, India *May. 2018 – Apr. 2019*

- Developed a new meta-heuristic optimisation algorithm on the food foraging behaviour of rat. We studied the behaviour of group of rats and based on the marking trails and the genetic evolution, we built an optimisation model.
- Further, the algorithm incorporates the mutation strategy within it to make it suitable to avoid stagnation conditions while performing optimization in complex search spaces. For deriving its utility various benchmark functions of different geometric properties have been used.
- We further performed Shapiro-Wilk test and Wilcoxon test h-value to show how this novel model is different from other algorithms and successfully achieved an error as less as 0.6% for 30 different convex functions till 100 dimensions.

Object Detection in RSI Images
Guide: Dr. Hemant Kumar Meena, Jaipur, India *Jan. 2019 – Apr. 2019*

- The main goal of the project is to detect the objects in Remote Sensing Images from Satellites with high level of accuracy.

- We developed a framework based on Bayesian principles for detecting objects from optical RSIs, which extensively reduces human labors for annotating training data while achieving performance comparable with that of the fully supervised learning approaches.
- We propose unsupervised feature learning via Deep Boltzman Machine to build high-level feature representation for various geospatial objects. The learned high-level features capture the structural and spatial patterns of objects in an effective and robust fashion, which leads to further improvement of object detection performance.
- Specifically, the object detection accuracy of the proposed WSL approach achieves about 97.13%, 92.34%, and 92.89% of what the baseline approach does in the Google Earth data set, the ISPRS data set, and the Landsat data set, respectively. data set, respectively.

COURSE PROJECTS

Neighborhood Living Condition Assessment using Health Data Analysis
Guide: Dr. B. Aditya Prakash *Aug. 2019 – Dec. 2019*

- The main objective of the project is to assess boroughs in New York city using intelligence developed by aggregating air quality data, crime data, and cleanliness data.
- We extracted the data from NYC Open Data API and stored it in our local database and further used SQl queries to call the required data. Then the data was pre-processed using matrix co-relation between the features in the whole dataset.
- We formulated a score using KNN clustering algorithm, and weighted Euclidean Distance, which gives different weights to different dimensions, which are the features here.
- We got a score of 0.00790, 04230, 00510, 0070, 0.0165 for Brooklyn, Staten Island, Manhattan, Bronx and Queens respectively using SVM model. Based on the above score we declared that Staten Island is the peaceful and comfortable borough to live-in.

Technology Roadmapping
Guide: Dr. Chang-Tien Lu *Aug. 2019 – Dec. 2019*

- This application helps user visualise different technologies which are associated with the user searched technology keyword using elastic search and dynamic query expansion on USPTO database.
- With the help of this application , user can explore different research fields using the wordcloud visualisation. This wordcloud contains clickable technical keywords about the relevant and possible technologies in accordance with the searched keyword, using USPTO database which help in identifying relationships between different fields of research.

Technologies used: Flask, jinja2, Django, HTML, python, CSS, SQL
