ABHINAV SAGAR

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EDUCATION

Vellore Institute of Technology, Vellore *July 2016 - Present*
Bachelor of Technology

EXPERIENCE

Vellore Institute of Technology, Vellore July 2018 - Present
Research Assistant

· - Advised by Prof. RajKumar Soundrapandiyan and Dr. Dheeba Jacob.

Vellore Institute of Technology, Vellore Dec 2019 - Present
Teaching Assistant

· - TA for UG level course CSE4020 (Machine Learning) with Professor Gayathri P.

Tessact, Mumbai May 2019 - Jun 2019
Computer Vision Intern

· - Designed a machine learning model from scratch for product recommendation using variational autoencoder.
· - The algorithm scored a mean average precision value of 0.86 which on deployment led to 23 percent increase in sales for the company.

Tata Steel, Jamshedpur Jun 2018 - Jul 2018
Deep Learning Intern

· - Trained a neural network on power grid electricity consumption data to predict the load 24 hours ahead of the actual generation.
· - My work was later refined and deployed by current engineers. It is currently being used and has boosted upto 20 percent energy in the plant.

PUBLICATIONS

Abhinav Sagar
Learning to Detect 3D Objects from Point Clouds in Real Time
Submitted for review - Neural Information Processing Systems 2020, Vancouver, Canada

Abhinav Sagar
Bayesian Neural Network via Stochastic Gradient Descent
International Conference on Machine Learning (ICML) 2020, Uncertainty and Robustness in Deep Learning Workshop, Vienna, Austria

Abhinav Sagar, Rajkumar Soundrapandiyan
Semantic Segmentation With Spatial Attention For Self Driving Cars
European Conference on Computer Vision (ECCV) 2020, Assistive Computer Vision and Robotics Workshop, Glasgow, UK

Abhinav Sagar
Generate High Fidelity Images With Generative Variational Autoencoder

Medical Image Computing and Computer Assisted Intervention (MICCAI), Simulation and Synthesis in Medical Imaging, 2020 Workshop, Lima, Peru

PREPRINTS

Abhinav Sagar, Dheeba Jacob
Convolutional Neural Networks for Classifying Melanoma Images
Upcoming - Medical Image Analysis (Elsevier)

Abhinav Sagar, Dheeba Jacob
On Using Transfer Learning For Plant Disease Detection
Submitted for review - Machine Vision and Applications (Springer)

PROJECTS

Retinal Image Synthesis using Variational Autoencoder
- Designed a neural network to take into account uncertainty while generating images of retina using variational inference and local reparamerization trick.

Instance Segmentation for Nuclei Detection
- Made a U-Net neural network for automatic segmentation of nucleus in microscopic images. The segmentation IOU value achieved was 0.416.

Cryptocurrency Price Prediction in Real Time
- Made an algorithm for predicting cryptocurrency price using LSTM neural networks. The MAE of the model obtained was 0.028.

VAE GAN to Create Facial Images
- Created fake images of people using variational autoencoder generative adversarial network using custom loss function and sampling from gaussian distribution.

ICC 2019 Cricket World Cup Prediction
- Devised a random forest model to predict the winner of 2019 cricket world cup by scraping data from Crickbuzz website. The accuracy of the model obtained was 70 percent.

Automatic Segmentation of Ships in Satellite Images
- Used a custom Mask R CNN algorithm to automatically identify whether a remotely sensed target is a ship or not. The algorithm obtained mean average precision value of 0.61.

Predicting Airbnb Prices
- Answered business questions so that both hosts and guests can plan well in advance. Also made a Light GBM model to predict house prices. The model achieved R-Squared value of 0.632.

ACHIEVEMENTS

- Attended the Nordic Probabilistic AI School at Trondheim, Norway with full travel grant.

- Ranked in the Top 30 Contestants for Flipkart Machine Learning Challenge held in Bengaluru, India.

- Participated actively in competitive programming on Spoj. My world rank currently is 3894.

- Awarded the VITEEE Scholarship for full 4 years.

TECHNICAL STRENGTHS

Programming Languages	Python, Java, C++, Javascript
Libraries	Tensorflow, Scikit Learn, Keras, Pytorch, Numpy, OpenCV, Spark
Frameworks	React, Flask, Express
Databases	MySQL, MongoDB

RELEVANT COURSES

Data Structures and Algorithms, Object Oriented Programming, Statistics and Probability, Discrete Mathematics, Web Technologies, Java Programming, Python Programming, Multivariate Calculus, Graph Theory, Robotics, Operation Research, Open Source Programming, Numerical Methods

REFERENCES

Professor Serge Belongie
Dept. of Computer Science
Cornell University, Ithaca, New York
Email: sjb344@cornell.edu

Professor Rajkumar Soundrapandiyan
Dept. of Computer Science and Engineering
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