

ABHINAV SAGAR

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EDUCATION

Vellore Institute of Technology, Vellore
BTech

July 2016 - Present

EXPERIENCE

Vellore Institute of Technology, Vellore
Research Assistant

July 2018 - Present

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

Vellore Institute of Technology, Vellore
Teaching Assistant

Dec 2019 - Present

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

Tessact, Mumbai
Computer Vision Intern

May 2019 - Jun 2019

- 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
Deep Learning Intern

Jun 2018 - Jul 2018

- 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.

PROJECTS

Bayesian Neural Network using Variational Autoencoder

- Designed a neural network to take into account uncertainty while generating fashion images using variational inference and local reparameterization 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.

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.

Deep Deterministic Policy Gradients for Bipedal Walker

- Made an agent to run which had no knowledge beforehand by interacting with the environment using actor critic model, prioritized experience replay and custom reward design.

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.

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.

PUBLICATIONS

Abhinav Sagar, Serge Belongie, James Davis et al

On Optimizing Human-Machine Task Assignments

AAAI Conference on Human Computation and Crowdsourcing (HCOMP), San Diego, CA, 2015

Abhinav Sagar, Rajkumar Soundrapandiyan

Semantic Segmentation for Self Driving Cars Using Dilated Transposed Fully Convolutional Neural Network

Submitted for review - Journal of Visual Communication and Image Representation (Springer)

Abhinav Sagar, Dheeba Jacob

Computer Aided Diagnostic Support System for Skin Cancer using Convolutional Neural Networks

Submitted for review - European Conference on Computer Vision 2020

Abhinav Sagar

A New Activation Function for Training Deep Neural Networks to Avoid Local Minimum

6th Workshop on Semantic Deep Learning - ICJAI

TECHNICAL STRENGTHS

Programming Languages

Python, Java, C++, Javascript

Libraries

Tensorflow, Scikit Learn, Keras, Pytorch, Numpy, OpenCV, Spark

Frameworks

React, Flask, Express

Databases

MySQL, MongoDB

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.

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

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Professor Rajkumar Soundrapandiyan

Dept. of Computer Science and Engineering

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