SANSIDDH JAIN

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EDUCATION

M.Tech, Computer Science & Engineering *2017 - 2019 (Expected)*
Indian Institute of Technology, Delhi Overall GPA: 8.45/10
Courses Studied - Machine Learning, Artificial Intelligence*, Database Management, Theoretical Data Science, Deep Learning, Advanced Data Structures, Functional Programming*
∗ - Ongoing

B.Tech, Industrial & Production Engineering *2014 - 2019 (Expected)*
Indian Institute of Technology, Delhi Overall GPA: 7.99/10
Courses Studied - Operations Research, Stochastic Modelling, Statistics, Linear Algebra, Real Analysis, Numerical Computation

WORK EXPERIENCE

Volume Estimation from Images May 2018 - Jul 2018
Wadhwani AI, Mumbai

- Developed a computer vision pipeline for estimating volume of an object given a set of images
- Designed for determining whether newborn baby is low birth-weight or not using a mobile phone
- Used Mask R-CNN trained on MS COCO dataset to segment out object from background in image
- Applied Structure-from-Motion (SfM) on segmented images to generate sparse 3D point cloud of object
- Applied Multi-view Stereo (MVS) depth map fusion on above resultant to generate dense point cloud
- Implemented "Touch-Expand" graph-cut algorithm to generate closed surface for volume calculation
- Also advised student team working on estimating soyabean yield from satellite images in Maharashtra

Data-driven Legal Reforms May 2017 - May 2018
Advisors - Prof. Mausam & Prof. Nomesh Bolia, IIT Delhi *Thesis (BTP-1 : A grade)*

- Scraped large dataset (> 15TB) of court cases summaries from Indian district courts. 420+/594 districts (∼ 71%) scraped
- Analysed districts across several metrics (eg - mean case duration) to identify good and bad anomalies
- Used KL divergence to come up with aggregate measure encompassing performance across all metrics
- Used other probabilistic distance measures (JS Divergence, etc) to develop family of aggregate metrics
- Implemented lexical cosine distance clustering to obtain a standardised list of casetypes across courts
- Trained several random forest, gradient boosted trees, and MLP models to predict case duration time
- Website designed to showcase project work. Presented to senior SC judge Justice Madan Lokur, and NITI Aayog

Internal Localisation Jan 2018 - May 2018
Advisor - Prof. Mausam, IIT Delhi *In collaboration with i2e1*

- Developed algorithm to estimate indoor location of multiple devices using solely Wi-Fi RSSI values
- Necessary for algorithm to be scalable, energy efficient, for deployment in several indoor environments
- Initial approaches included triangulation heuristics, and data agnostic signal propagation models
- Experimented with fingerprinting models; supervised nature inhibited scalability
- Trained unsupervised multinomial Hidden Markov Model (HMM) and unsupervised Gaussian HMM
- Developed 2 Kalman Filter models - one before RSSI to distance conversion, one after

Deep Learning Aug 2016 - Nov 2016
Instructor - Dr. Raghavendra Singh, IBM Research Delhi

- Designed a Neural Network which analyses simulated hadron collision data, to predict whether particular collision results in interim exotic particle formation (Baldi, et. al. (2014))
- Performed ablation studies on activation unit, learning algorithm, and model depth to get best-fit model
- Designed and trained a CNN for classifying apparel images. Also trained a Siamese CNN for returning the visually similar images for an input image from the apparel data (Bell and Bala (2015))
- Designed and trained LSTMs which correct grammatically incorrect sentences

Machine Learning Feb 2018 - May 2018
Instructor - Parag Singla, IIT Delhi *A- grade*

- Trained Linear, RBF Kernel SVMs, and Feedforward NNs on MNIST Handwriting Recognition Dataset
- Trained multiple Naive Bayes classifiers on the Large Movie Review Dataset to predict movie ratings from movie reviews. Alterations included incorporating TF-IDF frequencies, and character bigrams
- Trained decision trees and random forest classifiers on US Census data, to predict whether individual earns more than $50,000 a year
- Trained k-means, PCA-SVM, NN, and CNN classifiers to predict object given it's hand-drawn sketch
- Above dataset posted as internal Kaggle competition. Positioned 23/160 in leaderboard

Commodity Price Prediction System May 2016 - Jul 2016
Yobi Technologies, Gurgaon

- Developed regressive models which predicted trends in moving average of potato prices at local mandis
- Scraped daily price variation data for 20+ commodities at 3200+ markets over the past 10 years
- Macroeconomic indicators such as WPI index, Oil Prices, Irrigation Data & Crop Yield Data used to make predictions in movement of commodity prices
- Developed separate model for each individual market; 200+ markets covered in Haryana & Punjab

Hospital Automation System Jan 2016 - May 2016
Embedded Systems Design Project, IIT Delhi

- Designed and developed an information automation and management system for the IIT Delhi hospital
- Developed an android app for patients for appointment booking, prescription management, and reminders to take medicines
- Designed web app for doctors to facilitate easy digital prescriptions. Also designed backend system for seamless integration between the android app, web app, and medicinal database.
- Project awarded A grade. Poster presentation on project given at Open House, IIT Delhi

TECHNICAL SKILLS

Python	Keras, TensorFlow, Pandas, Numpy, Matplotlib, Scikit-Learn
Other Programming Languages	Java, C/C++, OpenMP, R
Web Development	HTML, CSS, Javascript (Leaflet, Plotly)
DBMS	MySQL, PostgreSQL
Other Tools	MATLAB, Shell scripting, HPC Systems

OTHER INTERESTS

Running, Trekking, Quizzing, Non-fiction Literature