SUSHANT S BURNAWAL

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EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2021	Bachelor of Technology Honors	Indian Institute of Technology, Kharagpur	7.91/10
2017	XII(CBSE)	Sarvodaya Senior Secondary School, Kota	87.0%
2015	X(CICSE)	St. Augustine's Day School, Kolkata	97.0%

SKILLS

Programming Languages: C/C++, R programming, Python, MATLAB, OCTAVE, XML, JAVA, CSS
Software: Adobe Photoshop, Adobe Illustrator, Tableau, Adobe InDesign, Android Studio, MySQL, MS-Excel, MS-PowerPoint

INTERNSHIPS/PROJECTS

Vehicle Route Optimisation using Reinforcement Learning| Publicis Sapient | Associate Data Science | June 2020 - July 2020

- Created a Multi-objective approach to solve the Vehicle Routing Problem for **Route Optimisation** with constraints of **Time window**
- Implemented Metaheuristic approaches like **Genetic Algorithms**, **Ant Colony Optimisation**, **Particle Swarm** and **Iterative Local Search**
- Linearised the constraints of the Vehicle Routing Problem to solve using **MILP** methods like the **CPLEX-py** and the **Gurobi-py**
- Solved the VRP using **Reinforcement Learning** Techniques by the application of **Pointer Networks** and the **Policy Gradients**

Stock Prediction using Reinforcement Learning | ITC Infotech India Ltd. | Research Intern | May 2019 - July 2019

- Predicted the fate of a stock (i.e. BUY, SELL or HOLD) using a Reinforcement Learning agent on historical data of 3 different shares
- Created several **Environments** with varying reward functions to obtain the best possible strategy to attain highest possible **sharpe ratio**
- Compared the outcome ROI on historical data with Reinforcement learning agents like **DQN, Double DQN and neuro-Evolution Strategy**
- Developed 5 different market indicators **namely MA, %R, MACD, RSI, %K** and used it to generate a trend using **LSTM-RNN** to improve ROI
- Performed sentiment analysis of news articles using **WordtoVec** model and **Transfer Learning** to further improve the sharpe ratio

Prediction of machinery related accidents using scarce data | Prof. Jhareshwar Maiti | August 2018 – April 2019

- Applied **LAD** algorithm to a two-class classification problem consisting of only 28 observations each having a set of 4 features
- Trained data in three stages namely **Data Binarization, SCP** and finally performed **Pattern Generation** using **MILP** approach
- Performed Leave-one-out-cross-validation procedure due for testing on discriminant formula followed by 5-fold cross validation

COMPETITIONS/CONFERENCES

General Championship Data Analytics | IIT Kharagpur | Secured: Bronze | January 2019

- Analyzed data consumption by different networks to predict the possibility and the type of congestion which is most probable to occur
- Engineered several features like the tilt area, subscriber density and a weekend feature along with existing ones to enhance accuracy
- Applied data **Model Ensemble**(Maximum Vote Classifier) **on support vector machine - rbf kernel, XGBoost, LightGBM and ANN**
- Performed Hyperparameter Tuning using **Grid Search** and **Bayesian Optimization** followed by a k-fold validation to verify robustness

NetApp Data Challenge | Kshitij, IIT Kharagpur | Secured: Bronze | January 2019

- Performed Text Classification on the given data of news headlines and description and categorised them into 41 different categories
- Used **TF-IDF** for feature extraction along with Noise Removal, Lemmatization, Tokenization and trained data using 4 distinct models
- Performed Model Ensemble techniques on the results obtained from **SVM-linear Kernel, Logistic Regression and Multinomial Naïve Bayes**

Open IIT Data Analytics | IIT Kharagpur | Secured: Bronze | September 2018

- Employed **ARIMA Time Series Model** to the given data after its stationarization to predict the medicine sales pattern in coming years
- Deduce interpretation from analyzed data to device Inventory Management Strategy to maximize profit and increase sales using **FMEA**
- Undertook extensive use of R programming, Python and MS-Excel for data pre-processing, forecasting and Tableau for data visualization

ACHIEVEMENTS

- Level 2 Qualifiers of the Flipkart GRid Challenge held in January 2019
- Among **Top 100** Scorers in JumpStart Coding Hackathon 2019 out of 2000 participants all **over India**

UNDERGRADUATE AND ONLINE COURSE

Probability and Stochastic Processes | Reinforcement Learning by Udemy |Deep Learning by Andrew NG| Partial Differential Equations | Machine Learning by Andrew NG| Algorithms and Data Structures | Advanced Reinforcement Learning by Udemy*

MANAGERIAL EXPERIENCE

Editor | Awaaz, IIT Kharagpur | July 2018 - Present

- Worked with a team of 23 members to organize various literary events, dramatic event like Panch Parmeshwar and workshops
- Conducted Graphic Designing workshop including Photoshop, Illustrator, Infographics and InDesign for team of 8 people
- Analyzed problems pertaining in the campus and complaints, and took initiatives to reach out to administration to resolve the issues

EXTRA CURRICULAR ACTIVITIES

- Won Bronze in Biz Quiz in Kshitij, IIT Kharagpur
- Part of Interhall Western Instrumentals as a Violinist for Azad Hall of Residence IIT Kharagpur