Sajal Goyal

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Educational Qualifications

Year	Degree/Certificate	Institute	CGPA/%
2018 - Present	B.Tech	Indian Institute of Technology Kanpur	8.2/10
2018	CBSE – XII	Kautilya Sr. Sec. School, Kota	89.8%
2016	ICSE – X	St. Peter's College, Agra	95.3%

Honors and Achievements

- Secured **1st** position in **FinFest Pan IIT Equity Portfolio Management** competition with **1000+** participants
- Secured **1st** position in **Stock the Stock** competition by Entrepreneurship Cell, IIT Kanpur with **150+** participants
- Secured **27th** position in **Data Science Hackathon** organised by **Trell** with **2000+** participants
- Secured **All India Rank 1981** in JEE Advanced 2018 amongst 160,000 candidates

Professional Experience

KPIT Technologies | Data Science Intern (*Mentor: Mohammad Shadan*) *May'21 - Jul'21*

Objective	• Deliver an unsupervised **Anomaly Detection** model for real time **health monitoring** of the **engine oil**
Strategy	• Applied LOWESS smoothing on various sensor data to remove noise and increase efficiency of algorithms • Performed unsupervised **feature selection** using **Deep Neural Network** and bountiful visualizations • Developed **temporal probabilistic** failure prediction model using **Autoencoders** with minimal false alarm
Impact	• Achieved **85% recall** on predicting anomalies in engine oil cycle and **<5% reconstruction error** mean

Key Projects

Tweet Sentiment Extraction (*Science and Technology Council, IIT Kanpur*) *May'20 - Jul'20*
- Built **NLP model** which takes tweet and sentiment as input and outputs part of tweet which represents that sentiment
- Performed **Exploratory Data Analysis** and stacked some layers on top of **RoBERTa** to increase robustness of the model
- Integrated a **5-fold cross validation** using **stratified** sampling to reduce overfitting and accomplished **0.715 jaccard score**

Autonomous Underwater Vehicle (*Mentor: Prof. Mangal Kothari*) *May'19 - Mar'20*
- Designed **detection** and **tracking** algorithm to detect complex objects and their centre under water using **OpenCV**
- Created **multi-class labelled underwater dataset** for training the State-of-the-Art real time object detection system
- Tweaked the vision layer in the codebase to complete **image processing** tasks meticulously while improving its robustness

Self-Driving Vehicle Simulation (*Mentor: Prof. Venkatesan Kanagaraj*) *Jan'20 - May'20*
- Pre-processed the **point cloud** data, collected by Velodyne's Puck lidar sensor(VLP-16), in MATLAB to remove invalid points
- Implemented code to differentiate ground points while getting bounding boxes of different objects by **DBSCAN** algorithm

Playing Atari with Reinforcement Learning (*Science and Technology Council, IIT Kanpur*) *May'20 - Jul'20*
- Implemented **reinforcement learning** algorithm for **Markov Decision Process** with raw pixels of current state as input
- Incorporated **experience replay** to reduce overfitting and reached human level accuracy with **10+ hours** of training

Research Experience

Changing the Game: The Rise of Sports Analytics (*Mentor: Prof. Faiz Hamid*) *Jan'21 - May'21*
Research paper going to be published in ***Journal of Sports Sciences***
- Reviewed **sports analytics** work for **decision making** with **16** critically analyzed papers selected using **PageRank** algorithm
- Employed **Network analysis** on bibliometric data of **127 research papers** to investigate the emerging areas of interest
- Explored **State-of-the-Art** techniques in Football analytics and studied its trends over the years with **stacked histogram**

Positions of Responsibility

Software Team Head (*Team AUV*) *Apr'20 - Mar'21*
- Spearheaded a group of **7 people** working on Autonomous Vehicle's software, planning and implementing technical changes
- Represented team at various exhibitions to share our experience with others and handled administrative and managerial tasks

Skills

Data Science: SQL, Tensorflow, Keras, Pandas, Scikit-learn, Numpy, Matplotlib
Programming Languages: Python, C, C++ | **Robotics**: ROS, OpenCV | **Utilities**: Git, LaTeX, MATLAB, Excel

Relevant Coursework

Introduction to Machine Learning
Applied Probability & Statistics
Data Mining & Knowledge Discovery
Computational Methods in Engineering
Fundamentals of Programming
Operations Management