SHIVAM SAINI

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EDUCATION

Degree	Institute / Board	CGPA / Percentage	Year
M.Tech (Industrial and Management Engineering)	IIT Kanpur	10/10 *	2021-23 (Expected)
B.Tech (Mechanical Engineering)	NIT Jalandhar	8.99/10	2016-20
Senior Secondary	CBSE (AISSCE)	96.6%	2016
Secondary	CBSE (AISSE)	9.4/10	2014

PROFESSIONAL EXPERIENCE

Mphasis Next Labs	**Data Science Intern**	

Project 1- Portfolio Optimization by using Reinforcement Learning		*June'22-July'22*
Objective	• To build a real-time optimized Portfolio using **Reinforcement Learning.**	
Approach	• Extracted data from real-time **APIs,** performed data **pre-processing** steps like filling of missing value, dropping columns. • Defined the **agent** behaviour and created the custom financial **environment** using **open AI's gym**. • Used **DDPG** (Deep Deterministic Policy Gradient) algorithm to learn the **policy function** by training the **actor-critic CNN**.	
Result	• Achieved portfolio **return** of 26.8 % during training and **10.6 %** on real-time data.	

Project 2- AWS Marketplace Solution		*July'22*
Objective	• To solve the problem of **lack of training image** dataset during training of Deep Neural Networks.	
Approach	• Used **Keras** and **OpenCV** library to generate the new dataset containing the **augmented images**. • Local testing of the model in **postman,** followed by containerization using **Docker,** and deployment on **AWS sagemaker.**	
Result	• The module is deployed on AWS marketplace named as Image Data Augmentation.	
Objective	• To develop the ML-based solution which **detects** and shows the **barcode** position in the image data.	
Approach	• Used **pyzbar** library to decode the position and information present in the barcode. • Local testing of the model in **postman,** followed by containerization using **Docker,** and deployment on **AWS sagemaker.**	
Result	• The module is deployed on AWS marketplace named as Barcode Detection.	

L&T ECC	**Graduate Engineer Trainee**	*Aug'20-Jul'21*

Project- Mumbai Metro UGC-01		
Challenges	• To facilitate the **daily progress reporting** in an easy-to-use format by site engineers.	
Initiatives	• Developed a **semi-automated** system of reporting daily work by using the google form and sheet.	
Duties	• Preparation of **3 weeks plan** and **monthly plan**, **material acquisition** as per requirement from site, subcontractor **billing**.	

Hero MotoCorp	**Operations Intern**	*Jun'19-Jul'19*

Project- Improvement in SPD (Spare Parts Division) service ratio.		
Objective	• To **improve** the **lot size** and **lead time adherence** by finding bottlenecks and constraints in the existing system.	
Approach	• Understanding the basic plant layout and existing system, collecting data by interacting with the different shop floors. • Applied **Fish Bone analysis** and **Why-Why analysis** on **4 M** (Man, Machine, Method, Material) to find the **root cause**.	
Result	• Applied new methodology like redefining lot size, **SANTEI, FIFO, PFEP**. Developed **reorder level inventory model** for packaging material which led to a possible reduction of cycle time by 15 %.	

ACADEMIC PROJECTS

Sales Analysis Using Multivariate Regression| Statistical Modelling for Business Analytics		*Aug'21-Sep'21*
Objective	• To analyze the parameters which drive the sales predominantly **(Variable of Interest).**	
Approach	• Performed **EDA**, feature engineering, calculated correlation matrix to analyze features driving the sales predominantly. • Used residual graph to find **heteroscedasticity** and used log transform to overcome it. • Used **VIF** (Variance Inflation Factor) to check **multicollinearity** and looked for **omitted variable bias.**	
Result	• Finalized best multivariate linear regression model with R^2 score of **0.72** by using feature elimination based on **p-value,** and **concluded** that the **variation of the sales** can be best explained by **MRP** and **Type of the Outlet.**	

Murder Rate Analysis on Panel Data | Statistical Modelling for Business Analytics		*Sep'21-Nov'21*
Objective	• To analyze the **effect of execution** on **murder rate** and decide whether to **abolish** it or not as a punishment.	
Approach	• Performed **EDA,** data preprocessing on a dataset comprised of **30 US states** (entities) and **3 years** (periods). • Performed **pooled** regression, regression with **entity,** and **time** fixed effect to overcome **omitted variable bias.**	
Result	• Obtained R^2 score of **0.935** for panel data regression with both entity fixed and time fixed effects and **concluded** that executions have **a deterrent** effect on the number of murders committed.	

Amazon Reviews Classification (NLP)| Applied Machine Learning		*Feb'22-Apr'22*
Objective	• To **classify** the **customer review** as positive or negative by using product features and text reviews provided.	
Approach	• Performed Data cleaning and preprocessing by **stop-word removal, tokenization, stemming, and lemmatization**. • Performed feature extraction from text by using **BOW** (Bag of words), **TF-IDF,** and **Word2Vec.** • Built **ML models** i.e., Naive Bayes, KNN, Logistic Regression, SVM, and Random Forest with **hyperparameter tuning**. • Performed **word embedding** with 100 dimensions after **one-hot encoding** and **padding**, and trained a 3 -layer **LSTM** model. • Used **dropout** on the hidden layer to **avoid overfitting** and created a more generalizable model.	
Result	• Used **specificity** (True Negative Rate) as evaluation matrix and achieved **75.43 %** using LSTM. • Used **specificity** as evaluation matrix and achieved **79.57 %** with the **Logistic Regression** model.	

Optimal Portfolio Construction| Financial Engineering		*Mar'22-Apr'22*
Objective	• To build the **Markowitz portfolio** by using historical data of **NIFTY 50** companies.	

Approach	• Extracted the data of stock price from 1st Jan 2017 to 1st March 2022 using yahoo finance python **API.** • Calculated the **expected return**, and **volatility**, selected the 10 companies based on **correlation matrix** and **Sharpe ratio.** • Plotted the **parabolic efficient frontier** by running simulations, and allocated funds in a risk-free asset and risky portfolio.
Result	• Achieved **expected return** of **26.8%** with a **risk** of **15.86%** and **Sharpe ratio** of **1.3114** for finally selected portfolio.

Low Market Penetration Analyses of WhatsApp Pay in India| Marketing Research   *Feb'22-Apr'22*

Objective	• To analyze the reason behind the **poor market penetration of WhatsApp pay** in India compared to other UPI pay.
Approach	• Formulated **Management Decision** and Market Research problems, Research Questions, and hypotheses. • Designed **questionnaire** for online survey form using **Likert Scaling techniques**, collected 150+ sample responses. • Analyzed the data using a statistical test (One sample t-test) in **SPSS** software to verify the hypotheses.
Result	• **Inclusion** of new **features** like recharge, ticket booking, and **improving UI** can help to increase the customer base.

PPOC Summer Camp, IITK   *May'22-Jul'22*

Project-Modelling and Forecasting Exchange Rate

Objective	• To forecast the **Exchange Rate** of China currency **(Yuan)** by using historical data of 268 months (1991 to 2014).
Approach	• Checked **stationarity** by **ADF** test, **seasonality** by using decomposition, and **autocorrelation** by using **ACF** and **PACF** plots. • Used different time series models - AR, MA, **ARMA**, and **ARIMA** to predict the exchange rate.
Result	• **Predicted** Exchange Rate for next **67 months** (2014-2019) based on best-tuned model **ARIMA (1,1,1)** with **RMSE 0.36.**

SKILLS, COURSEWORK AND CERTIFICATIONS

Technical Skills	**Python**	**DSA**(Basics)	**SQL**(MySQL)	**SPSS**	Lingo	MS-Excel	ML Libraries: NumPy, Pandas, Matplotlib, **sklearn, statsmodels	** DL (Deep Learning) Libraries (Beginner): Keras, TensorFlow, OpenCV, Pytorch
Non-Technical Skills	Analytical Thinking	Problem Solving	Strategic Thinking	Decision Making	Adaptability	Team Management	Communication Skills	Interpersonal Skills	Leadership	Team Work	Initiative Taking Skill
Academic Courses	**Data Mining & Knowledge Discovery**[*] **	Applied Machine Learning	Statistical Modelling for Business Analytics**	Probability & Statistics	Introduction to Computing	Marketing Research	Financial Engineering	Operations Research for Management
Online Certifications	**SQL** Masterclass	**Time Series Analysis** using Python	**Power BI**: Zero to Hero	**Python for Finance**: Investment Fundamentals	**Deep Learning** with Python	Convolutional Neural Networks	**Excel** Skills for Business

POSITION OF RESPONSIBILITY

Department Placement Coordinator, SPO IITK[*]   *May'22-Present*
  ● Working as a departmental representative of SPO, IIT Kanpur to assist in the successful conduction of placement drive.

PG Senator Y21, Student's Gymkhana, IITK[*]   *Mar'22-Present*
  ● Responsible for bringing issues faced by 500+ PG students to the students' Senate.
  ● Coordinated with Hall authorities and COSHA for the allotment of hostel room to the PG students.

Junior Placement Coordinator, IME IITK   *Jul'21-May'22*
  ● Achieved **100%** success rate in the **Summer Internship Drive 2021-22** for all 21 students of M.Tech IME Y21 Batch.
  ● Made awareness of various career paths; Initiated Industry collaborations for long-term projects to augment students' learnings.
  ● Promoted department as a brand on LinkedIn; Conducted Alumni guest lectures on the latest Industry practices.

Publicity Head, SOME NIT Jalandhar   *Apr'19-May'20*
  ● **Led a team** of 10+ members which was responsible for online publicity, visiting other campuses to publicize the events.

Organizing Team, Robowars NIT Jalandhar   *Oct'19-Nov'19*
  ● **Managed** and conducted robotics event involving **100+** participants in the technical fest of college i.e.**TechNiti'19.**

EXTRACURRICULARS AND ACHIEVEMENTS

● **Academic Excellence** Certificate, M.Tech IME IITK.
● Secured **99.6** percentile in Mechanical Engineering paper in GATE-21.
● Secured **2nd** Rank in Mechanical Department in under-graduation
● **Certificate of Merit** by CBSE for performance in 12th standard.
● Participated in **adventure camp**-2013 hosted by Nehru Yuva Kendra.
● Secured **1st position in Mathematics Fest**-2012, organized by S.F. DAV Public School, Muzaffarnagar for a working model.

*Ongoing