# ARJUN KESRI

## ACADEMIC QUALIFICATIONS

| Year | Degree /Board | University /Institution | %/CGPA |
|---|---|---|---|
| 2025* | Post Graduate Diploma in Business Analytics | IIM Calcutta, IIT Kharagpur, ISI Kolkata | - |
| 2022 | B.Tech Mechanical Engineering | Institute of Engineering and Technology, Lucknow | 8.7/10 |
| 2017 | CLASS XII | Army Public School, Jaipur | 94.4 % |
| 2015 | CLASS X | Army Public School, Jaipur | 9.8/10 |

**KEY SKILLS/TOOLS** Statistical Modeling, Time Series Analysis, DL, NLP, Python, R Programming, C++, Tensorflow, PyTorch

## AWARDS AND ACHIEVEMENTS

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| **Scholarships** | ■ Awarded **U.P Post-Matric** Scholarship worth **56.6 k** & **64.4 k** for the academic year **2020-21** and **2021-22** |
| **Scholastic Achievements** | ■ Achieved **State Rank 1770** out of **~1.4L+** aspirants in **UPSEE-2018** conducted by **Dr. A.P.J.AKTU**, Lucknow<br>■ Achieved **All India Rank 233** amongst **~11.2k+** aspirants in **GATE** 2023 in the **XE-B**(Engg.Sc.) examination |
| **Case Competitions** | ■ **National Finalist**(7/424) in **HR** Analytics competition **Mu-lytics** conducted by **Master's Union** on **Unstop**<br>■ **Runners Up**(2/385) in **Networsify**(2023), conducted by **Optima**, **IIT Kgp** and won **prize** money worth **30k**<br>■ **National Finalist**(6/535) in **Ops-Hunt** 2024 conducted by **OpSigma**, the Operations & SC Club of **IIFT Delhi** |
| **Certifications** | ■ Completed **6 week** training course on **Machine Learning** conducted by **Internshala,** achieved **grade**: **89%**<br>■ Competed a **4-course** series on **Natural Language Processing** offered by **DeepLearning.AI** on **Coursera**<br>■ Competed a **4-course** series titled **Finance and Quantitative Modeling for Analysts** offered by **Coursera** |

## ACADEMIC PROJECTS

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| **Retail Price Prediction (Regression)** | ■ Leveraged regression analysis to predict **optimal product price** for **retail transaction** data with **30** features<br>■ Implemented **OLS**, **Lasso** and **Ridge**| Handled **outliers** by **Jack-Knife**, removed **multi-collinearity** using **VIF**<br>■ Accomplished **29.3% MAPE**, performed **feature selection** & **regularization**, improved to 9.4% using **Lasso** |
| **News Recommender (Classification)** | ■ **Pre-processed** news **extracts** and built **classification** models using **SVM**, **Random Forest, CNN** and **BERT**<br>■ Extracted **class-wise** probabilities**,** formed **embeddings** and stored them in **KD-Tree** for efficient **traversal**<br>■ Devised **algorithm** to retrieve **closest** news using **KD-Tree**, provided **recommendations** as per **preference** |
| **Financial News Sentiment Analysis (NLP)** | ■ Built sentiment classifier on **financial news** data,created preprocessing **pipeline**, used **TF-IDF** & **Word2Vec**<br>■ Built baseline **RF** & **XGB** models for **primary** analysis, fine-tuned **Fin-BERT** on data,achieving **83%** precision<br>■ Extracted **outputs** from base models & trained **ANN** to predict final sentiment, **increased precision** to **86%** |
| **Drug-Drug Interaction Prediction (Healthcare)** | ■ Harnessed **~1.92L** drug pairs to formulate **Drug-Drug** interaction classifier model to predict **86 DDI classes**<br>■ Combined drug **chemical structures** into **feature vectors**; performed feature selection & used , **KNN** & **DNN**<br>■ Executed **stacking** ensemble( **RF**, **NN** & **XGB**) with **LR** as the **meta learner** & achieved an **accuracy** of **0.94** |
| **Resource Management** | ■ Planned **allocation** of healthcare **providers** for **PHCs** in **24** districts, **utilizing** the patient **volume** forecasts<br>■ Forecasted **teleconsultations** in districts,leveraging **hierarchical forecasting**,**Holt-Winters ES** & **SARIMAX**<br>■ **Redeployed** health providers, **minimizing** salary **expenses** & imposing **penalty** for **surplus,** through **LPP** |

## ADDITIONAL PROJECTS

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| **Semantic Segmentation (Deep Learning)** | ■ Performed **segmentation** on **cityscapes** dataset of **~3.4k landscape** images using **pixel-wise classification**<br>■ Formulated **index-based** coloring for **objects** & applied **downscaling**, **masking** and **image transformation**<br>■ Built **UNet**, **ENet** & **ESnet** models, achieving **max 0.851 mDICE** & **0.742 mIoU**, leveraged **DeepLabV3** model<br>■ Contrasted **true** & **predicted** masks, compared **CE vs DICE** & tuned **beta** to see **loss' effect** on **predictions** |
| **Image colorization (Generative AI)** | ■ Developed a **cWGAN pix-2-pix** model to perform **image colorization** on a dataset of **4k+ grayscale** images<br>■ Constructed **ResU-Net** generator & **PatchGAN** discriminator , **minimized L1** & combined **Wasserstein loss**<br>■ Applied **resizing** & **normalization transforms**,achieved **0.039 L1** & **4.981 Wasserstein** loss,**PSNR** of **29.53** |
| **Uplift Modeling** | ■ Performed **uplift modelling** to identify **customer groups** most likely to be **influenced** by **direct campaigns**<br>■ Built **TLearner** & **SLearner** for **treatment** & **control** groups, utilizing **DTC**,**LightGBM**,**XGB** as **base learners**<br>■ Applied **Qini curves** for **cumulative** & **incremental lift** ,plotted **uplift trees** & achieved **AUUC** score of **0.56** |
| **Market Risk Modeling (Time Series Analysis)** | ■Modeled daily stock **price volatility** of **NIFTY50** data with **1600+** observations using a **GARCH(1,1)** model.<br>■ Performed **preprocessing**,**ADF** test for stationarity, analyzed **ACF**, **PACF** plots of squared **returns, residuals**<br>■ Forecasted exchange rate via **ARIMAX** & interest rate differentials as **exogenous**, achieving **MAPE** of **1.26%** |
| **Bank Customer Segmentation (Clustering)** | ■ Implemented **association rule-based** learning on data of **~20k** customers to enhance **targeted marketing**<br>■ Utilized **K Prototypes** & **KMeans**, obtained **0.721 silhouette** score,used **MCA** & **contingency table** analysis<br>■ Identified **association rules** within clusters using **Apriori** to derive **insights** on influential **purchase** factors |

## POSITIONS OF RESPONSIBILITY & EXTRA CURRICULARS

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| **Team Member** | ■ Part of **The Empyreans** ,built a **go-kart** & took part in **CV 150cc** category in **7th Go-Kart Design Challenge** |

**ELECTIVES : Deep Learning , Healthcare , FRM, SAAPM, Bayesian** | **INTERESTS : Singing , Cricket ,Travelling**