ARNAV SINGLA

Second-Year Undergraduate - Statistics and Data Science

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Academic Qualifications

Year	Degree/Certificate	Institute	Performance
2021 - Present	BS, Statistics and Data Science	Indian Institute of Technology Kanpur	**9.1**/10
2021	CBSE(XII)	SGGS SR SEC School, Chandigarh	97.4%
2019	CBSE(X)	St John's High School, Chandigarh	96.4%

Academic Achievements

- Secured **All India Rank 1018** in **JEE Advanced** among **1.41 Lakh** shortlisted candidates from across the country *2021*
- Secured **All India Rank 1653** in **JEE Mains** among **9.4 Lakh** participants from across the country *2021*
- KVPY SX fellowship awardee with an **All India Rank 1474** conducted by Indian Institute of Science, Government of India *2020-2021*
- Received the **Academic Excellence Award** twice for exceptional academic performance in academic sessions 21-22 and 22-23.

Key Projects

Sign Language Segmentation for Indian Sign Language | *Course Project* | 🐙 *Jan'23 - April'23*

Prof. Ashutosh Modi, Department of Computer Science and Engineering, IIT Kanpur | CS779 - Statistical NLP
- Built a **deep learning model** for delineating temporal boundaries between signs in sign language, in order to distinguish individual signs in continuous footage.
- The model used an **inflational 3D convolutional network** to first extract spatio-temporal information from the frames, and then a **multi stage temporal convolutional network** to detect sign boundaries.
- Due to lack of annotated data for Indian Sign Language, we used a transfer learning paradigm called source free domain adaptation.
- We attempted to reproduce the findings of a research paper, Sign Segmentation with Changepoint-Modulated Pseudo-Labelling by Renz et al, that involved training a sign segmentation model for German Sign Language using a model pretrained on British Sign Language data.

AQI | *IIT Kanpur Consulting Group* *October'22-Ongoing*

Prof. Sachchida Nand Tripathi, Department of Civil Engineering, IIT Kanpur
- Using **Deep Learning models** like **Transformers, LSTMs, ARIMA, RNN's, Auto Regression, GRU's, CNN's** to anticipate the values of PM2.5 in the future using time series data of multiple factors, such as humidity, temperature, PM2.5, etc.
- Developing a dashboard/website to display real-time air quality data in the states of Bihar and Uttar Pradesh by deploying several low-cost sensors at various sites and computing the PM10 and PM2.5 concentrations

Building Corpus for Indian Sign Language Processing | *Undergraduate Project* *Jan'23- Ongoing*

Prof. Ashutosh Modi, Department of Computer Science and Engineering, IIT Kanpur
- Built a corpus of around **100,000 videos** equivalent to approximately **250 hours of signing footage**.
- Located and compiled ISL-related playlists and videos from several YouTube channels, such as ISH News and ISH Shiksha, amongst others. Wrote several Python programmes in order to automate the process of data scraping and processing.

Predicting Stock Prices using CAPM and Fama French Models | *Finance and Analytics Club, IIT Kanpur* *May'22 - July'22*

- Implemented the **Capital Asset Pricing model** and the **Fama French three factor** in Python on various stocks. Sourced the data from Yahoo Finance API and used Pandas, Matplotlib and Numpy to implement statistical models for **time series analysis of stock prices**.

Technical Skills

Programming	Machine Learning	Data Science	Utilities
Python, R, C++, C	PyTorch, Numpy, Pandas, Matplotlib, Scikit-Learn, OpenCV, pytube, pyaudio	Rshiny, Rcpp, Rvest, Tidyverse, ggplot2, plotly, dplyr, imager	git, LaTeX, Markdown, bash, docker

Relevant Courses   *A*: Grade for Exceptional Performance*

Data Science Lab I, II	Statistical Computing	Theory of Statistics
Statistical NLP	Theory of Statistics	Elementary Stochastic Processes(**A***)

Positions of Responsibility

Secretary | *IIT Kanpur Consulting Group* *August'22 - May'23*

- Using the power of Data Science for community welfare and social good through projects and collaborations with various companies and organizations, by providing efficient and innovative solutions using **Deep Learning and Machine Learning**.
- Worked on literature review of many research papers in the field of **AI**, health care (smart ICU's), Air quality Monitors, etc
- Involved in a number of national and international competitions, including the Global Management Challenge (Round 2) and the IIMB WhitePaper competition on Sustainability in Operations Management.

Secretary | *Dance Club, IITK* *June'22 - May'23*

- Participated in a number of college-level performances (Thomso'22, IIT Kanpur orientation, Antaragni'23 IITK, etc.)

Student Guide | *Counselling service, IIT Kanpur* *Sep'22 - Present*

- Helped as a part of a **team** to conduct a week long Orientation Session for incoming batch consisting of over **1200** students
- Assisting a group of 5 freshmen academically and emotionally, to get acclimatized with the new college environment