

# ARNAV SINGLA

Third-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	<b>9.21</b> /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 2021** among **1.41 Lakh** shortlisted candidates from across the country
- Secured **All India Rank 1653** in **JEE Mains 2021** among **9.4 Lakh** participants from across the country
- KVPY SX 2020-2021 fellowship awardee with an **All India Rank 1474** conducted by Indian Institute of Science, Government of India
- 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 - Apr'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-Labeling 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 Oct'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 - Jul'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, L <sup>A</sup> T <sub>E</sub> X, Markdown, bash, docker

## Relevant Courses

*A\*: Grade for Exceptional Performance*

Data Science Lab I, II Statistical NLP	Statistical Computing Theory of Statistics	Theory of Statistics Elementary Stochastic Processes( <b>A*</b> )
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## Positions of Responsibility

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

- Applying the power of **Data Science** for community welfare and social good through projects and collaborations with various companies and organizations by implementing efficient and innovative solutions using **Deep Learning** and **Machine Learning**
- Conducted a comprehensive literature review of numerous research papers in the field of AI, health care (smart ICUs), Air Quality Monitors
- Participated actively in several 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 Jun'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