Kumar Kanishk Singh

2nd Year Undergraduate
Department of Mathematics and Statistics

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Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2021 - Present	B.S	Indian Institute of Technology, Kanpur	6.67/10
2020	CBSE(XII)	Dayawati Modi Academy, Rampur	91.4%
2018	CBSE(X)	Delhi Public School, Aligarh	90.4%

Key Projects

- **Segmenting Indian Sign Language** *(February,2023-Present)*
  Mentor: Dr. Ashutosh Modi, Assistant Professor at Department of Computer Science and Engineering, IIT Kanpur.

  > **Objective:** Segment Indian Sign Language using Computer Vision and Natural Language Processing.
  >
  > **Procedure:**
  > - Learn the grammar and semantics of Indian Sign Language.
  > - Develop a pipeline for the given task.

- **Dimensionality Reduction using PCA and Autoencoders** *(December,2022-Present)*
  Mentor: Saurabh Patil, Leader of Brain and Cognitive Society, IIT Kanpur.

  > **Objective:** Compare two methods of dimensionality reduction using Principal Component Analysis (PCA) and Autoencoders.
  >
  > **Procedure:**
  > - Imported the images from Flower Image dataset Kaggle
  > - Applied PCA and reduced the number of principal components to compress the images.
  > - Created an autoencoder model encode the image and compress and decode the images.

- **Analysis on Indian Web Series** *(2022)*
  Mentor: Dr. Dootika Vats, Assistant Professor, Department of Mathematics and Statistics, IIT, Kanpur.

  > **Objective:** Analyze various aspects of Indian web series on different OTT platforms using R and its libraries.
  >
  > **Procedure**:
  > - Scrapped data from IMDb.
  > - Cleaned the data and removed entries with NA values to get 302 entries.
  > - Recieved empirical answers to some interesting questions posed, viz. which genre is more popular among viewers, which platform targets which age group or which genre is more popular on them, how do male and female preferences differ with genres, etc.
  > - Deployed a shiny app with a user-friendly graphical interface enabling to give inputs and view the plots accordingly.
  > - Analyzed the data using the above shiny app.
  >
  > **Conclusion:**
  > - Most voted Genre is Drama and most voted age category is Adult
  > - All genres and age categories have similar ratings.
  > - The female votes on IMDb are lesser than male votes.
  > - Found the most preferred genre on each platform and their target age group.

- **Basis of Learning** (2022)
  Mentor: Saurabh Patil, Leader of Brain and Cognitive Society, IIT Kanpur.

Objective: Learn fundamentals of Deep Learning, as well as some useful tools for putting them into practice.

Procedure:
  - Learnt Numpy, Pandas, Matplotlib, Tensorflow, Anaconda, Git, and Jupyter Notebooks ,
  - Learnt Exploratory Data Analysis and Basic Deep Learning.
  - -Developed a Neural Network from scratch with Numpy.
  - -Built a CNN model using tensorflow.

Conclusion:
  - Acquired the ability to use various libraries and pieces of software, including Anaconda, Git, and Jupyter Notebook
  - Got predictions on data from the Neural Network from scratch with about 60% accuracy.
  - Predicted the digits in mnist dataset using the CNN Model with about 90% accuracy.

Technical Skills

- **Programming Languages:** C, C++, Python, R, Robot Operating System(ROS), HTML
- **Software and Libraries:** Git, Tensorflow, Scikit-learn

Positions of Responsibility

- **Junior Team Member, Team Aerial Robotics** (2022-Present)
  Worked with ROS to develop software for Unmanned Aerial Vehicles(UAV).
- **Secretary, Brain and Cognitive Society** (2022-Present)
  Worked on various projected and wrote various articles on Artificial Intelligence and Machine Learning. Also, organised talks with various researchers in the field of AI and Neuroscience. Also, maintaining the website of the society.

Relevant Courses

Data Science Lab	
Fundamentals of Computing	Linear algebra and Differential Equations
Introduction to Probability Theory	Matrix Theory and Linear Estimation
Statistical Natural Language Processing (Ongoing)	Andrew NG's Online Deep Learning Specialization (Ongoing)