Viral Chitlangia

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Education

BS **Indian Institute of Technology Kanpur**, Statistics & Data Science — 2022 - 2026

- **CPI** : 9.0/10.0
- Honours Track Student
- **Minor** : Dept. of Computer Science - Machine Learning & Applications

XII **Delhi Public School Bangalore East** — 2022

- **Grade** : 96%

Scholastic Achievements

- **Academic Excellence Award, IIT Kanpur** - For exceptional performance in Academic Session 2022-23.
- Was part of the team that represented **IIT Kanpur** in **Mimamsa 2024** hosted by **IISER Pune**, and secured **4th place** among more that **1500** participating teams.
- Achieved All India Rank **646** in **JEE-ADVANCED 2022**
- Achieved All India Rank **1030** in **JEE-MAINS 2022**

Publications & Pre Prints

- Viral Chitlangia, Mosuk Chow, Sharmishtha Mitra. "Swap Regression Methodology for Predicting Relationship with Historical Bivariate Data." *arXiv preprint* arXiv:2508.15479, August 2025. — Aug 2025

Manuscripts in Preparation

- Viral Chitlangia, Suncica Hadzidedic, Miaojia Fu. "Digital Interventions for Loneliness" *Manuscript in preparation* for submission to ICT4AWE 2026.

Projects

SWAP Regression | Prof. Sharmishta Mitra | IIT Kanpur — Nov '23 - Aug '25

- Analyzed the paper written by **Mosuk Chow**, **Bing Li** and **Jackie Q. Xue**, on **ON REGRESSION FOR SAMPLES WITH ALTERNATING PREDICTORS AND ITS APPLICATION TO PSYCHROMETRIC CHARTS** and developed models with alternating predictors on Bivariate Data using the method of SWAP Regression.
- Defined a new loss function for the **Swap Regression** model.
- Implemented ALT-OPT to solve the loss function.
- Implemented the model to test on real data as **US Public Debt and GDP**.
- Applied the model to predict the causality direction of **US Public Debt and GDP** without prior knowledge.

Digital Intervention for Loneliness | Prof. Suncica Hadzidedic | Durham University — May '24 - Ongoing

- Explored **Reddit** and **Google** to find relevant subreddits and apps which target **loneliness**.
- Scraped **Reddit**, **Google Play**, **Apple Play** and **A Lonely Life**(a loneliness forum), using relevant Python libraries, and Rvest(R), to collect text data on **loneliness**.
- Used **Topic Modelling** on the data collected to **cluster** the data into relevant topics, to realise what people are talking about online, to find out which areas of apps people would like to see an improvement in.

Deep Generative Models for Spatial-Temporal Data | Prof. Swapnil Mishra | NUS May '25 - Jul '25

- Implementing and analyzing the paper on **AggVAE** written by **Swapnil Mishra et al**.
- Working on using the technique to incorporate **AggVAE** with **Population Disaggregation** techniques to get good predictions using Low Resolutions data points.
- Implemented the model on **US Covid Data**, segregated by 9 Regions of the country.

A Review of Enveloping Techniques in Bayesian Statistics | Prof. Dootika Vats | IIT Kanpur Aug '25 - Nov '25

- Understood the paper by **Apartim Shukla**, **Dootika Vats** and **Eric C. Chi** on **MCMC Importance Sampling via Moreau-Yosida Envelopes**.
- Reading about various enveloping techniques in **optimization** and understanding the properties of various envelopes, and their usability in MCMC sampling.
- Implemented envelopes, such as Moreau Yoshida and Bregman Moreau Envelopes, for Constraint Distributions.
- Performed Proximal Sampling, using enveloping technique, for distributions with high condition number.

MCMC Machine Unlearning | Course Project | Prof. Dootika Vats | IIT Kanpur Jan '25 - Apr '25

- Understood and Implemented the paper on **Markov chain monte carlo-based machine unlearning: Unlearning what needs to be forgotten** by QP Nguyen et al.
- Implemented a novel algorithm for the purpose of Machine Unlearning Sampling by MCMC using the idea of **Newton's Method Update** proposed in **Certified data removal from machine learning models** by C Guo Et al.
- Compared the algorithm with other prominent MCMC sampling algorithms with **Logistic** and **Negative Binomial** Regression data.

Other Experiences

Teaching Assistant | MTH 208 | Prof. Dootika Vats | IIT Kanpur Aug '24 - Nov'24

- Assisted Professor Dootika Vats in teaching the Undergraduate and Postgraduate students enrolled in MTH 208 the basics of the R language.
- Got a hands on experience of teaching a class of enthusiastic students.

Technical Skills

Languages: Python, R, C, C++, LaTeX

Softwares and Libraries: Matplotlib, Seaborn, Numpy, Pandas, Tensorflow, Librosa, Numpyro, Rvest, Tidyverse, GGPlot2, Quarto, Shiny App

Relevant Courses

An Introduction to Bayesian Analysis*	Markov Chain Monte Carlo*
Probability Theory	Time Series Analysis
Introduction to Machine Learning*	Probabilistic Machine Learning
Data Structures & Algorithms	Theory of Statistics*
Elementary Stochastic Processes - I*	Elementary Stochastic Processes - II
Linear Regression & ANOVA*	Techniques in AI & Data Mining*
Multivariate Analysis	Analysis-I*

* : Excellent Performance

Positions of Responsibilities

Coordinator, Stamatics Club	Oct ’24 - Aug ’25
Executive, Stamatics Club	Nov ’23 - Oct ’24