

# Chitrak Raj Gupta

☎ (+91) 7318017903 | ✉ chitrak@iitk.ac.in | 📱 chitrak7 | 🌐 chitrak7

## Education

### Indian Institute of Technology, Kanpur

B.S-M.S Dual Degree, Department of Mathematics and Statistics

July'15-Present

CPI: UG 8.2/10, PG 10/10

### DAV Pubic School, Bilaspur

CBSE(XII)

March'15

92.6%

### Kendriya Vidyalaya, Kusmunda

CBSE(X)

March'13

CGPA: 10/10

## Work Experience

### Uber: Software Development Engineer

May'19-July'19

- Worked on the problem of *a priori* sanity checking and business and technical anomaly detection in a time series dataset.
- Designed & implemented a real-time and scalable solution using Holt Winters algorithm that supports monitoring & alerting.
- Integrated the system to Uber's internal UI platforms for positive user experience and deployed the code in production.

### UrbanYogi: Machine Learning Engineer

Nov'18-Jan'19

- Worked on fault detection in video snippets of people performing motor tasks using pose detection library CMU Openpose.
- Set up a pose detection and scoring platform from scratch using Tensorflow along with its back-end and deployed it on AWS.
- Added functionalities including real-time analysis, robustness to camera angle, user's pace and position using openCV2.

### IIT Kanpur-New York Office: Front-end Developer

May'17-July'17

- Added support for notifications, media embedding, mentions and tags based feed filter and integrated to google analytics

## Projects

### Regression Models for High Dimension Censored Data: Post Graduate Project

Aug'19-Present

- Parameter Estimation and Variable Selection in log-linear Birnbaum Saunders Regression Model using Elasticnet and EM.
- Proposed model using Geometric Skew Normal distribution to incorporate skewness & heavy tails in censored survival data.

### Variance Reduced Stochastic Gradient Descent: Course Project: Convex Optimization

Jan'19-April'19

- Analyzed various Variance reduced SGD techniques and evaluated them on a neural network implemented from scratch.
- Studied and commented on various aspects of the proof for convergence rate and expected complexity of the algorithms.

### Stochastic Variational Inference: Course Project: Topics in Probabilistic Modelling and Inference

Jan'19-April'19

- Surveyed SVI, a posterior approximation algorithm for large-scale data which works like SGD by utilizing Natural gradients.
- Tested SVI on LDA, a conditionally conjugate model using a corpus of 8000 documents obtained from The New York Times.

### Filter Selection for Speaker Diarization: Course Project: Introduction to Machine Learning

Aug'18-Nov'18

- Implemented a speaker diarization module consisting speech detection, Speaker Change Detection and Speaker Merger.
- Scored various audio filters on a supervised sample of audio using greedy class assignment to label discovered clusters.

### Fake News Detection: Microsoft code.fun.do

Aug'18-Nov'18

- Designed and implemented a fake news detection algorithm using NLP and Multinomial Naive Bayes for classification.
- Application was successful at detecting fake news articles, including satires and also detected political ideological bias.

## Positions Of Responsibility

### Teaching Assistant, MTH409: C programming and Data Structures

Aug'19-Nov'19

- Conducted weekly labs, held doubt clearing sessions and assisted in grading for a class of size 70 under Prof. S Ghorai.

### Coordinator, Hindi Sahitya Sabha

April'17-March'18

- Lead a team totalling 40 members and organised inter hostel competitions, Hindi Learning Classes and Literary Events.

## Skills and Coursework

**Programming Languages and Frameworks:** C, C++, Python, R, Golang, Haskell, NodeJS, AngularJS, Tensorflow, OpenCV.

**Courses in Machine Learning:** Introduction to Machine Learning, Probabilistic Modeling & Inference, Convex Optimization.

**Courses in Computer Sci.:** Data Structure & Algorithms, Algorithms II, Randomized Algorithms, Functional Programming.

**Courses in Mathematics and Statistics:** Bayesian Analysis, Non Linear Regression, Econometrics, Stochastic processes, Data Simulation & Sampling, Time Series, Number Theory, Pattern Recognition, Mathematical Logic, Theory of Computation.

## Achievements

- **Academic:** AIR 1117 in JEE Advanced 2017 | State Rank 1 in NTSE, Chattisgarh | Recipient of Inspire Scholarship from GOI
- **Extra Curricular:** Hockey: Gold, Udghosh'15 and Bronze, Sportech'16 | 1<sup>st</sup>, KVS Regional Level Debate Competition.