

Sagnik Mukherjee

Indian Institute of Technology – Kanpur

Education

Year	Degree	Institute	CPI/Grades
2015	Secondary Exam	RKMV Narendrapur	92.5/100
2017	Higher Secondary Exam	RKMV Narendrapur	93.4/100
2021(expected)	B.Tech, Electrical Engineering	IIT Kanpur, India	9.6/10(6th Sem)

Majors and Minors

- Major in Electrical Engineering, IIT Kanpur
- Minor in Machine Learning and Applications, IIT Kanpur
- Minor in Linguistics Theory, IIT Kanpur

Awards and Achievements

- **Academic Excellence Award**, IIT Kanpur, on freshman, sophomore and junior years
- **IUSSTF-Viterbi** research fellowship Program, conducted by USC, awarded to top 15 applicants
- **SURGE** research fellowship, conducted by IIT Kanpur, awarded to top 150 applicants
- **33rd** in Engineering joint Entrance Examination, WBJEE, West Bengal, 2017
- **JBNSTS**(Jagdish Bose National Science Talent Search) Junior Scholar for basic sciences, 2016
- **Top 1%** in National Standard Examination in Physics, 2016

Internship Experience

AutoSumm - Automated DL Models for Text Summarisation

Adobe, India

Mentored by Dr. Niyati Chhaya, Sr. Research Scientist

May 2020 - Jul 2020

- Worked on a research project that combines AutoML techniques for Natural language processing tasks and built a live demo with a deployed prototype for our solution. Our solution leverages multiple machine learning and deep learning techniques to achieve near **SOTA performance** by **auto-generated** models
- Was responsible for extensive experiments, testing the utility and the validity of the developed framework across datasets and multiple model parameters
- Worked in a team of 4 interns and leveraged a complex set of deep learning tools and libraries for this implementation
- With extensive use of django, CSS and html, we built a live demo and presented the solution approach in front of adobe business leaders and scientists
- The work will be publication ready and will be submitted for patent as per Adobe policies

Academic Projects

Lexical Complexity Prediction, SemEval 2021

IIT Kanpur, India

Course Project, NLP(CS779) IITK

Sept 2020 - ongoing

- Implemented standard LSTM based sentence and word level models, with 5-fold crossvalidated Mean Absolute Error marginally better than baseline
- Finetuned BERT, Roberta, XLM using multiple GPUs and tried their ensembles improving over the baseline significantly
- Above points are on single word task(task 1) and currently working on task 2(Multiword expressions)

Hate Speech Detection-Hindi(Constraint shared task 2021)

IIT Kanpur, India

Course Project, Data Mining(CS685, IITK)

Sept 2020 - ongoing

- Implemented Bi-GRU as a baseline (since organizers didn't provide) and achieved an weighted F1-score of 70%
- Finetuned BERT, XNLI, Roberta etc. available in the hindi language building RNN and Linear layers over them and achieved near perfect classification score on the coarse classification task
- Fine classification task in under progress

Implementation of a Probabilistic Taxonomy

IIT Kanpur, India

Mentored by Dr. Arnab Bhattacharya, Associate professor

Feb 2019 - May 2019

- Implemented the **syntactic extraction** process, Which finds out the super concepts and relevant sub concepts from every sentence of the corpus in English language
- Aimed at the information extraction process which is based on **probabilistic extraction of IsA pairs** (Defining criteria for super and sub concepts) from each sentence

The Firefighter Problem, Graph Theory

Indian Statistical Institute, Kolkata

Mentored by Dr. Sandip Das(ACMU Unit ISI Kolkata)

May 2018 - Jul 2018

- Studied the preliminaries of graph theory and solved some warm up problems. Made an effort to solve the Firefighter Problem - a well known unsolved optimization problem in the domain of graph algorithms
- For infinite square grids we were able to show that the surviving rate is one fourth

Minimum path isolation problem for 3-D grid graphs

IIT Kanpur, India

Mentored by Dr. R. Tewari, Associate professor

Feb 2019 - May 2019

- Proved the existence of 0 cycle in case of linear edge weight functions that are skew-symmetric in coordinates.
- The same thing for quadratic boils down to converting the attained equations to linear Diophantine equations

Teaching Experience

- Tutor(current), Fundamentals of Computing(ESC101), IIT Kanpur
- Teaching Assistant(current), Machine Learning for Signal Processing(EE698V), IIT Kanpur

Relevant Coursework

Fundamentals of Computing	Intro. To Machine Learning	Data Mining
Machine Learning for Signal Processing	Probability and Statistics	Data Structure and Algo.
Stat. and AI techniques in Data Mining	Signals, Systems, Network	Intro. to Linguistics
Stat. Natural Language Processing	Linear Algebra and ODEs	Optimization for Big Data

Online Courses

Deep Learning Specialization NLP Specialization Tensorflow in Practice (Specialization)

Key Skills

Programming Languages.....

C • C++ • Python • GNU Octave • Bash • LATEX • Git

Machine Learning Libraries.....

Pytorch(Adv) • Keras(Adv) • Tensorflow(Inter) • Spacy(Adv) • NLTK • Matplotlib(Adv) • Numpy(Adv)
• Huggingface (Inter)

Languages Known.....

Bengali • Hindi • English • Sanskrit

Extracurricular.....

Public Speaking • Digital Painting • Table Tennis • Chess

Responsibilities Held

Institute Counselling Service

IIT Kanpur, India

Core Team Member, Operations Team

Apr 2019 - Apr 2020

- Successfully planned, envisioned and executed a 2-day training workshop for the selected student guides, 7-day orientation program for over 950 students and their parents
- Coordinated with 8 students, 3 counsellors, 2 psychiatrists and faculty to provide academic, financial and emotional support to students
- Selected and led a team of 174 student guides from over 600 candidates who had applied for the same
- In the entire tenure guided over 12 students out of academic probation with proper emotional and academic support
- Conducted various sessions spreading mental health awareness all over the campus

Institute Counselling Service

IIT Kanpur, India

Student Guide

Apr 2019 - Apr 2020

- Helped 6 students adjust to the campus life by actively providing emotional and academic support
- Supervised group movements during academic registration, campus tours, health survey and other sessions during orientation

Miscellaneous

- Active contributor to technical platforms like Stack Overflow and Pytorch Forum