

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(7th 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
- **IUSSSTF-Viterbi** research fellowship Program, conducted by USC, awarded to top 15 applicants from India
- **SURGE** research fellowship, conducted by IIT kanpur, awarded to top 150 applicants from India
- **33rd** in Engineering joint Entrance Examination, WBJEE, West Bengal, 2017
- **JBNSTS**(Jagadish Bose National Science Talent Search) Junior Scholar for basic sciences, 2016
- **Top 1%** in National Standard Examination in Physics, 2016

Workshop Papers

- “Classification for Lexical Complexity Regression Task”, SemEval 2021, Task I (Paper)
- “Multi-task Learning and Transformer Finetuning for Emotion Classification and Empathy Prediction”, Wassa 2021, EACL 2021 (Paper)

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 libararies 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 resulted in filing of a patent, and is currently under submission at EMNLP 2021

Academic Projects

Lexical Complexity Prediction, SemEval 2021

Paper Link

SemEval 2021 task I

Sept 2020 - Dec 2020

- Finetuned BERT, Roberta, XLM and tried their ensembles improving over the baseline significantly
- Came up with a novel classification approach to tackle a regression task as a classification task, and published the work at SemEval 2021

Lexical Complexity Prediction, SemEval 2021

Paper Link

WASSA Shared task, EACL 2021

- Finetuned BERT, Roberta, XLM and tried their ensembles improving over the baseline significantly
- Achieved winning solution to the shared task with data augmentation and multi-task learning based approaches on BERT and ELECTRA

Hate Speech Detection-Hindi

IIT Kanpur, India

Course Project, Data Mining(CS685, IITK)

Sept 2020 - Dec 2020

- Implemented Bi-GRU as a baseline and achieved a 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 binary classification task

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
- Tutor(Fall Semester), Fundamentals of Computing(ESC101), IIT Kanpur
- Teaching Assistant(Fall Semester), 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

Adv. Topics in ML

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

Core Team Member, Operations Team

IIT Kanpur, India

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

Student Guide

IIT Kanpur, India

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