

# Ayush Jain

SENIOR UNDERGRADUATE · ELECTRICAL ENGINEERING WITH MINOR IN COMPUTER SCIENCE

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## Education

Year	Qualification	Institute	Grade
2018 - 2022	B. Tech, Electrical Engineering	Indian Institute of Technology, Kanpur	9.6 / 10.0
2018	Class XII (CBSE)	Podar International School, Ahmedabad	95%
2016	Class X (CBSE)	Podar International School, Ahmedabad	10 / 10

## Publications

### DOES SOCIAL PRESSURE DRIVE PERSUASION IN ONLINE FORA?

[Paper]  
2021

AYUSH JAIN, SHASHANK SRIVASTAVA

Empirical Methods in Natural Language Processing (EMNLP)

## Research Experience

### GNN FOR MULTIMODAL EMOTION RECOGNITION | IIT KANPUR

PROF. ASHUTOSH MODI

July 2021 - Ongoing

- Worked with a team to develop a Graphical Neural Network that uses **text, audio and vision modalities** together to **predict emotions**
- Worked on the **feature extraction pipeline** of Wave2Vec2 audio based features
- Worked on analysing the **importance of GNN** layers in understanding the context by plotting UMAP reductions of feature outputs
- Worked on performing ablation and error analysis
- Paper under review at **ACL 2022**.

### RESEARCH INTERN (NLP) | UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

PROF. SHASHANK SRIVASTAVA

February 2020 - September 2021

- Paper published at EMNLP 2021**
- Worked on the changeMyView sub-reddit dataset to study **group-discussion dynamics**
- Analysed the **role of community intervention** on persuasion by features that model the sentiment changes and the overall stance of the community
- Developed a model that uses community comments and it's interplay with the ongoing conversation and predicted the persuasion output with **80% accuracy**
- Performed **ablation studies** and **counterfactual analysis** that strengthen claims of causality

## Experience

### SDE INTERN | MICROSOFT INDIA (R&D) PVT LTD

ABAC SPECIAL CLOUDS

May 2021 - July 2021

- Implemented the API for **Attribute Combination Hash Generation** while handling **collision** and **concurrency** issues
- Implemented the **128-bit Murmur 3 Hashing Algorithm**
- Extended the **PDP Engine** to perform policy checks, also returning missing attributes for the subject
- Implemented an Allowed List Web API that has endpoints to trigger full or partial refresh for the User's Access control list
- Integrated the extended PDP Package with the Allowed List API to perform e2e testing of the User Access control list refresh
- Received a Pre-Placement Offer

## Open-Source

### SUMMER OF BITCOIN | SOB

July 2021 - September 2021

- One of the 50 students selected for the program
- Ranked 1st out of 6000+ candidates** in the coding task
- Contributing to **BTCPayServer**, a Bitcoin payment processor that lets you accept BTC without fees or intermediaries
- Working on adding and improving the **server file storage features** in the server
- Attending workshops organised by Chaincode Labs to learn about the core Bitcoin concepts

## Projects

### POS TAGGING USING HMM

SELF PROJECT | 🌐

India  
June 2020

- Implemented a POS Tagger on the wall Street corpus using **Hidden Markov Model**
- Applied **Viterbi** Algorithm and attained accuracy of **95%**


## CONNECT-4 AI

SELF PROJECT | 

India  
June 2020

- Built a two-player Connect-4 game engine using **Python** and **Pygames**
- Used **mini-max** algorithm along with **alpha-beta** pruning to enhance the efficiency of the engine to search for best move upto **six steps** ahead of current state of the game

## CONVEX OPTIMIZATION

PROGRAMMING CLUB, IITK | 

Kanpur, India  
May 2019 - June 2019

- Learning based Project that dealt with rigorous Linear Algebra and Optimisation Techniques for **Deep-Learning Models**
- Implemented several models including **ADAM**, **ADAGrad**, **RMSPprop**, **AMSGrad** etc

## Scholastic Achievements

2021	Accepted as one of the 50 candidates for the <b>Summer of Bitcoin</b> Program amongst 6000+ participants	India
2020	<b>Accepted to 3 Minors in Computer Science:</b> Algorithms, Computer Systems and, Machine Learning and Applications	Kanpur, India
2020	Got <b>Academic Excellence Award</b> , IITK for 2 consecutive years 2018, 2019	Kanpur, India
2018	Secured <b>All India Rank 637</b> in the JEE Advanced examination amongst <b>2.25 lakhs</b> shortlisted students	India
2018	Secured <b>All India Rank 535</b> in the JEE Mains examination amongst <b>1.2 million</b> candidates	India

## Technical Skills

<b>Programming/Scripting</b>	C, C++, C#, Python, JavaScript, Verilog
<b>Web Development</b>	CSS/HTML, Node.js, Express, ASP.NET, React
<b>Utilities</b>	Pytorch, Git, SQL, Jupyter Notebook, $\LaTeX$ , NLP

## Relevant Coursework

Multivariable Calculus	Linear Algebra	Probability and Statistics
Fundamentals of Computing *	Data Structures and Algorithms	Algorithms-II
Differential Equations	Computer Organization	Operating Systems
Introduction to Machine Learning *	Topics in Probabilistic Modelling and Inference	

\* - Excellent Performance

## Positions of Responsibility

**MANAGER** | WEB DIVISION, ANTARAGNI, IIT KANPUR

July 2019 - Feb 2020

- Developed the Mobile Application for Antaragni using Flutter
- Featured as one of the top 10 trending apps on Play Store in its category, 2K+ downloads, 4.9/5.0 rating
- Real-time notifications for contestants regarding important updates on timing and venue of competitions
- Personalised Antaragni news-feed based on the subscriptions to events and competitions by users

**SECRETARY** | PROGRAMMING CLUB, IIT KANPUR

July 2019 - April 2020

- Took a Lecture on Express back-end library and explained about setting up a server and using authentication middle-ware

**ACADEMIC MENTOR** | COUNSELLING SERVICE, IIT KANPUR

July 2019 - April 2020

PHY102: INTRODUCTION TO MECHANICS

- Took multiple doubt clearing sessions, both hall level and institute level and also gave one-on-one tutoring to a few students

**STUDENT GUIDE** | COUNSELLING SERVICE, IIT KANPUR

July 2019 - April 2020

- A Mentor to the students of freshman year helping them to get accommodated in the campus and guide them whenever they are in need