

# Ambuj Krishna Agrawal

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## EDUCATION

### Carnegie Mellon University

*Masters of Intelligent Information Systems (MIIS)  
Language Technologies Institute (LTI), School of Computer Science (SCS)*

Pittsburgh, PA, USA

*Starting Aug. 2024*

- **Coursework In Progress:** Advanced Natural Language Processing, Intro to Machine Learning, Multimodal Machine Learning

### Indian Institute of Information Technology, Allahabad

*Bachelor of Technology (Honors) in Information Technology (B.Tech)*

Prayagraj, India

*July 2017 – Sept. 2021*

- **Overall GPA:** 8.82/10
- **Relevant Coursework:** Artificial Intelligence, Image And Video Processing, Data Structures and Algorithms, Distributed Systems, Database Management Systems, Operating Systems, Graphics and Visual Computing, Linear Algebra

## INDUSTRIAL EXPERIENCE

### Senior Software Developer

*CRED*

February 2023 – July 2023

*Bangalore, India*

- Worked on the bill payments platform powering services like electricity, water, rent. Built Vouchers as a service from scratch integrating with various third-party brands.
- Owned and built core backend services related to credit card management. Solved a complex native memory leak in JVM cutting AWS cost by 25% for many services across CRED.
- **Internship** (February - June 2021) - made a complete backend microservice from scratch for a new line of utility on CRED for BNPL (Buy Now, Pay Later).
- **Technologies used:** Spring boot, dropwizard, Golang, AWS (SQS, DynamoDB, S3, Parameter Store, Lambda), Datadog, signalFX, SQL, Pinot.

### Software Development Engineer

*LinkedIn*

July 2021 – February 2023

*Bangalore, India*

- Upgraded authentication cookie signatures to industry-standard ECDSA after testing on CPU, memory usage, and security benchmarks. Fixed major vulnerability like replay attacks during sign in with google flow.
- Integrated sign in with Facebook on LinkedIn to move away from passwords with positive WAU results. Also added support for Whatsapp alerts for secure communication.
- Reduced number of API calls by analysing call patterns by 10%. Migrated and improved the processing of last update timestamp of users reducing resources by 50%.
- **Internship** (May - July 2020) - made APIs for a new architecture for storing phone numbers handling various edge cases. Came up with a clustering algorithm to generate required number of regexes for phone number validation to replace google's libphonenumber.
- **Technologies used:** Offspring, Java, Kafka, Espresso, Oracle, NOSQL, RestLi.

### Full Stack Internship

*Elucidata*

October 2020 – January 2021

*New Delhi, India*

- Worked in close collaboration with the Pfizer team as a client to develop different automated workflows needed for vaccine generation by the researchers at Pfizer.
- **Technologies used:** Groovy on Grails, SQL, HTML, CSS, JS, AWS, Docker.

## NOTABLE PROJECTS

### OxyTracker

2021

- Project made for Haryana Govt. (India) to track oxygen cylinders during the peak of covid second wave in India. Facilitated the flow and tracking of cylinders to civilians and doctors from distributors identified by QR code and cylinder number. **Technologies used:** Firebase, node, react, express.

### learn.ai

2020

- As a part of hackathon, worked with team to make a platform to help the learning of machine learning in a playful and engaging way where the users can interact with object to make customized model and get corresponding PyTorch code in realtime. **Technologies used:** p5.js, PyTorch, Javascript.

- Made a platform that converts a YouTube playlist to a Spotify playlist and vice versa. Optimized the searching and mapping algorithm that powered this conversion to give better results than anything in the market. **Technologies used:** Python, Flask, React

## PUBLICATIONS

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1. **SLAM and Map Learning using Hybrid Semantic Graph Optimization**, accepted as first author in the 2022 30th Mediterranean Conference on Control and Automation (MED), Athens, Greece.

## RESEARCH EXPERIENCE AND INTERNSHIPS

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### Semantic SLAM [Code]

Jan 2020 – July 2020

*Guide: Asst. Prof. Rahul Kala, Department of Information Technology*

IIIT Allahabad

- Improved localization accuracy of V-SLAM by injecting semantic information of detected corner points (using L-CNN). Detected objects in a scene that were used for place recognition and correspondence matching, which further enhanced the semantic information provided to the V-SLAM module.

### Machine Learning Research Internship

May 2019 – July 2019

*Guide: Professor K.K Shukla, Department of Computer Science and Engineering*

IIT BHU

- Developed a robust high accuracy model on bpi-12 and helpdesk data to improve upon the results from original research paper on Predictive Business Monitoring with LSTM and self-attention layer-based models.

### Monitoring Social Distancing with AI

July 2020 – Jan 2021

*Guide: Professor Pavan Chakraborty, Department of Information Technology*

IIIT Allahabad

- Developed a technique that transforms the footage into a 3D panoptic scene, combining SSDs for pedestrian detection and then applying perspective transformation. This final 3D projection enabled us to accurately count instances where people breached safe distances, even under low-resolution feed and challenging camera angles.

## TECHNICAL SKILLS

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**Programming Languages:** Java, C/C++, Python, SQL, Golang**Frameworks:** Spring Boot, Dropwizard, Node, Flask, Pytorch, Keras, React, Android**Areas of Expertise:** Microservices, Clean Code Architecture, Distributed Systems, Deep Learning, Natural Language Processing (NLP)

## AWARDS AND ACHIEVEMENTS

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- \* 3rd place in CRED's annual hackathon with 70+ teams. Made an internal platform for facilitating the maker-checker process for deploying product configurations to production. Estimated savings of nearly \$6.5 Million in a year.
- \* 1st in a M.A.D (Mobile Android Development) Hackathon organized by IIIT Allahabad.
- \* Top 10 in Hack 36 organised in MNNIT Allahabad with over 200 teams.
- \* 7th in over 300 submissions at Hack the Mountains 2.0, Jammu & Kashmir, India.
- \* As the overall Head of Rangtarangini, the dramatics society of IIIT Allahabad, led the team to win various inter-college dramatic events.