Anant Rai

+1 551-998-4741 | anant.v.rai@gmail.com | github.com/RaiAnant | linkedin.com/in/anant-rai

EDUCATION

New York University, Courant	Master of Science, Computer Science
CGPA - 3.88	*September 2021 - Present*
Indian Institute of Information Technology, Allahabad, India	B.Tech - Information Technology
CGPA - 9.11/10	*July 2017 - Aug 2021*

PUBLICATIONS

Predictive Risk Analysis using Deep Learning in Indian Traffic	March 2021
in ***IEEE International Conference on Intelligent Transportation Systems (IEEE ITSC)***	*Indianapolis, US*
Food Recommendation System using Neural Collaborative Filtering & Sentiment Analysis	July 2020
presented at ***International Conference on Advancement in Interdisciplinary Research (ICAIR)***	*India*

EXPERIENCE

Research Assistant — Jan 2022- Present
CILVR Lab, NYU — *New York, USA*

- Working in the field of Robot Learning and Intelligence in collaboration with Hyundai and advised by Prof. Lerrel Pinto
- Main goal of my research is to achieve generalization in Imitation Learning, through techniques like doing nearest neighbors over structured representation for action and planning.
- For representation learning, have implemented and explored techniques like BYOL and VICReg. For structured representation, I am applying Detic with modifications.
- I am working with Stretch RE1 robot, trying to make it solve tasks like door-opening, object picking etc.

Research & Development Intern — Jan - June 2021
Temasek Lab, Nanyang Technological University — *Singapore*

- Lead the development of Meeting Room Speech Recognition Android Application, capable of automatic transcription
- Developed in Java native, managing scheduled implementation of features and product release, bug tracking, and optimisations. Suggested improvements on existing implementations resulting in significant performance enhancement.
- For real-time updates and synchronization, used Live Data and Observers with API (retrofit) and sockets to achieve efficient interfacing between UI and backend.
- On the side, implemented and trained image-captioning model using transformer and hosted on flask server for MAGOR, live video captioning.

Remote Research Assistant — July 2020 - April 2021
CITEC Lab, Bielefeld University — *Germany*

- Implemented Value Iteration Network, a deep reinforcement learning based approach, for prediction and planning of actions in the 2D PHYRE environment
- Devised optimal environment representation using trees and graphs for intelligent cost calculation and re-routing decisions in the environments of NeurIPS2020: Flatland challenge (multi-agent reinforcement learning on trains problem)
- Using Conflict Based Search (CBD) and Deep-Q learning achieved decent performance on the environment (3rd position in round 1 and 6th position on round 2)

Data Science Intern — Summer 2019 & 2020
LYTiQ - GmbH — *Germany*

- Used Deep Learning approaches to solve various problems like NSFW detection and filtering, tyre tread depth estimation (for checking safety and usability) and important field extraction from verbose documents
- Developed an app for document submission on MS Teams that interacted with users through a server-less python bot
- Also designed a pipeline for the above app that would parse the documents (using OCR and NLP) submitted to the bot and store the extracted information to Cosmos DB (Azure). This helped to digitize paper based data and increase the efficiency by more than 2x.
- Modelled data into Azure Dynamics 365 Sales environment, using Azure Data Factory and Azure Functions

PROJECTS

Risk Analysis using Trajectory Prediction in Indian Traffic *(collaboration with University of Maryland, College Park)*
- Built a module using SSD (45 mAP) and SORT to detect and track agents in novel video dataset of Indian Traffic
- Developed special LSTM based network architecture to learn the agent's behaviours and interactions for trajectory prediction in dense heterogeneous traffic
- Devised Weighted-Elliptical-Model for risk modelling and combined it with trajectory prediction to get novel predictive-risk-analysis (20% improvement over baseline). Its research publication was presented at **IEEE ITSC 2021**

Food & Food Business Strategies Recommender
- Used Data Mining and an array of Deep Learning techniques like Collaborative filtering, NN classifier and Sentiment Analysis to analyse and capture food habits of Indian customers as a part of Data Mining course project
- Collected and organised data from food giants like Swiggy and Zomato on a flask-server, for analysis and predictions based on location, and presented results on a web-app created using Node Js
- This work was incorporated into a paper that was presented at **ICAIR 2020 conference**

OxyTracker
- Developed Android app, in a team, for smooth and timely supply of oxygen for Harayana state govt.
- Using Firbase, the app allows tracking complete status of cylinders from delivery to usage, speeding the process and removing the possibility of oxygen theft or misplacement of the cylinders.

TECHNICAL SKILLS

Languages: Python, Java, C/C++, Kotlin, Matlab, SQL, LaTex
Tools & Platforms: Pytorch, Fastai, Keras, Tensorflow, Android Studio, Firebase, Azure, GCP, Spring Boot

ACHIEVEMENTS & EXTRACURRICULAR

- Runner-up in Prototype Hackathon at IIIT Allahabad
- App-Operations Member of Asmita 2019 - Sports Festival
- Member of Theatre Club of IIIT Allahabad
- 1st in App-Development competition at IIIT Allahabad
- Event Organiser of Effervescence 2018 - Cultural Festival