

Gurbaaz Singh Nandra

JUNIOR UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

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Education

Indian Institute of Technology Kanpur

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING - 9.2/10.0

Kanpur, India

2019 - Present

MGN Public School

CLASS XII CBSE BOARD - 95%

Jalandhar, India

2017 - 2019

MGN Public School

CLASS X CBSE BOARD - 10.0/10.0

Jalandhar, India

Till 2017

Honors & Awards

2021	Silver medal in Inter IIT Tech Meet 9.0 , , built a 3D web visualisation tool for ISRO's Astrosat	🔗	IIT Guwahati
2020	Academic Excellence Award , for exceptional performance in academic year 2019-20		IIT Kanpur
2020	Papertowns: An AR product , approved under Pre-seed Ideation Program by DORA, IIT Kanpur	🔗	IIT Kanpur
2019	All India Rank 208 , secured among 200k shortlisted students in JEE Advanced		India
2019	All India Rank 159 , among 1.5 million students in JEE Mains conducted by NTA		India
2019	National top 1% in NSEC , and qualified for INAO and INChO olympiad conducted by IAPT		India
2019	KVPY Fellowship , secured AIR 90 among 100k students conducted by IISc Bangalore		India
2017	NTSE Scholarship , awarded by Gov of India. Secured State Rank 1		India

Work Experience

Vaultedge Software Pvt Ltd, Bengaluru

2.5 Months

DATA SCIENCE INTERN

May 2021 - Present

- Assisted in building models for extracting all the relevant data from each of the documents in the loan package. Extraction of entities from OCR text of mortgage documents by fine-tuning the dataset on Question Answering models in PyTorch, pre-trained on SQuAD dataset with BERT and RoBERTa architectures
- Trained the model with custom questions on distil roberta and improved f1 score from baseline score of 0.47 to 0.67, and achieved partial match score of 0.80 for DoT documents, surpassing the existing NER approach which had score of 0.64
- Made custom questions by exploring the dataset to make them more contextual and usable for the question answering task. Wrote inference scripts for the trained models for actual deployment to the production server
- Researched and explored layout forms multimodals like Layout LMv2 and LayoutXLM and used AWS textract to build in-house form recogniser and key-value relation extractor for various form documents

Qure.ai Technologies Pvt Ltd, Mumbai

2 Months

AI ENGINEER INTERN

May 2021 - Present

- Gained exposure to various technological tools like PyDicom, Django-Swagger, Docker and wrote an introductory blog on Docker
- Tasked with testing and API documentation of Django backend of qER Image Manager for Head CT Scan DICOM images using Django and Sphinx
- Implemented a scalable and customisable dockerised React App (to serve as an in-house GUI product) to dynamically render user configuration forms for qER pathologies report using the JSON Schema based approach
- Tested the API calls to backend via ngrok tunneling before its final integration with the Django backend using Axios library. Secured the app with an authentication layer and included the helper information for better UX (user experience)

Projects

IITK Coin

IIT Kanpur

Mentor: Bhuvan Singla (Y18) | SUMMER PROJECT, PROGRAMMING CLUB

May 2021 - July 2021

- Developed a centralised pseudo-coin system in GoLang for use in IITK Campus
- Involved Database Management, Password Authentication with Hashing & Salting and User Session Validation with JSON Web Tokens (JWTs)
- Various techniques such as concurrency and deadlock prevention were implemented to keep transactions safe and quick and maintain ACID properties

AI Lawyer 🤖

IIT Kanpur

with Parth Srivastava, Shubh Agrawal and Suhas | COURSE PROJECT, PROF. SWAPRAVA NATH

Sept. 2020 - Nov. 2020

- Implemented game theory and argumentation framework via graphical database Neo4j and textual entailment NLP to build an AI debating chat-bot
- Conducted a data-driven study, and successfully used BERT for argumentation mining to generate 2,26,335 arguments from web-scraped 31,125 raw US Supreme Court Cases
- Encapsulated the constructed weighted directed graph of arguments/ arguments network in a debater chat app using websockets with Node.js, Express and Socket.io with Vanilla JS on the frontend with a custom UI

Speech Ledger 🗃️

D2C Hackathon

with Antreev S Brar and Som V Tambe | FLIPKARTGRID 2.0

July 2020 - Aug. 2020

- Developed a custom pipeline for a Realtime Background Noise Suppression to solve problems of Voice Interactions in Indian Houses & Neighborhoods
- Fine tuned the denoiser Dual-Signal Transformation LSTM network, Speaker recognition module based on VGG-Speaker-recognition and Speaker diarization based on UIS-RNN to work synchronously with Flipkart's Speech-to-Text API
- Qualified for penultimate round, among Top 36 teams in the problem statement category

Model Zoo 🐾

IIT Kanpur

Mentors: Nirmal Suthar, Deepankur Kansal (Y18) | SUMMER PROJECT, PROGRAMMING CLUB

May 2020 - Jul. 2020

- Studied Deep Learning research papers and implemented them from scratch using PyTorch, in domains of Computer Vision, NLP, GANs and MultiModals
- Worked with InfoGAN, GloVe, ResNet-34 and Image Captioning multimodal with CNN encoder and LSTM decoder and CIFAR-10, MNIST and Flickr8k datasets and summarised the results in blogs

RAD: Reading, Analysis, Discussion 📖

IIT Kanpur

Mentors: Simran Singh, Yawar Altaf (Y18) | SUMMER PROJECT, ASTRONOMY CLUB

May 2020 - Jul. 2020

- Reading, analysis and discussion of various astronomical concepts and phenomenon from celebrated book Introduction to Astronomy : Frank H. Shu
- Grasped an intermediate level knowledge of Tensors and documented the summary of topics discussed in \LaTeX
- Won award in the category "The Best Documentation" by SnT Council, IITK for the project

Basic CP

IIT Kanpur

SUMMER PROJECT PROGRAMMING CLUB

May 2020 - July 2020

- Learnt about different Data Structures and advanced algorithms covering Number Theory, DP, Greedy algorithms, Trees, Graphs and practised on competitive programming platforms
- Explored the domain of optimising time and space complexity and studied fast computation techniques

Writing OS in Rust

IIT Kanpur

Mentors: Saurav Prakash, Satyam Ralhan (Y17) | SEMESTER PROJECT, ASSOCIATION FOR COMPUTING ACTIVITIES

Jan. 2020 - May 2020

- Thoroughly read and studied the blog on same project by Philipp Oppermann [🔗](#) to create operating system using minimal Rust kernel that runs on bare metal
- Created a Rust executable that does not link the standard library
- Understood working of a kernel and the communication via system calls

Examination Portal 🗂️

IIT Kanpur

with Anubhav Kalyani | ESC101 ADVANCED TRACK COURSE PROJECT, PROF. PIYUSH RAI

Sept. 2019 - Nov. 2019

- Developed a web application enabling user to create or appear for a timed bound MCQ exam. Post submission one can view utilities like score, rank, average class marks and the correct solutions.
- Implemented user authentication using Firebase Auth and handled user queries via Firebase Realtime Database

Technical Skills

Programming	C/C++, Python, Golang, Bash, Javascript, Verilog, Julia, Rust
ML Tools	PyTorch, Keras, Tensorflow, NLTK, OpenCV, Scikit-learn
Web Development	Django, Flask, Jekyll, Hugo, React, Sphinx, JQuery, HTML5, CSS
Utilities	Docker, Kubrenetes, Git, PostgreSQL, SQLite, Neo4j, Firebase, Selenium, Vim, \LaTeX
OS	Linux(Ubuntu), Windows, WSL
Languages	English, Hindi, Punjabi

Relevant Coursework

Data Structures and Algorithms
Discrete Mathematics
Linear Algebra and ODE
Probability in Computer Science

Software Development and Operations
Fundamentals of Programming
Introduction to Game Theory and Design Mechanism*

Computer Organisation
Logic in Computer Science
Multivariate Calculus

* - PG Course

Positions of Responsibility

Coordinator

ASTRONOMY CLUB

IIT Kanpur

April 2021 - Present

- Responsible for handling club activities and events, organising workshops, watch streams and webinars for the campus
- Revamped and built the clubs website, live at astroclubiitk.github.io

Senator

STUDENTS' GYMKHANA

IIT Kanpur

March 2021 - Present

- Represented 900+ students of my batch and helped in carrying out initiatives in the governing body of Students' Gymkhana

Student Guide

COUNSELLING SERVICE

IIT Kanpur

November 2020 - July 2021

- Assisted a group of 5 freshmen academically and emotionally, to get acclimatized with the new college environment

Academic Mentor, Electrodynamics

COUNSELLING SERVICE

IIT Kanpur

November 2020 - July 2021

- Held virtual classes and doubt clearing sessions for the students to cope with the academic system of the institute

Secretary





QUIZ CLUB

IIT Kanpur

July 2020 - May 2021

- Tasked with conducting quiz events for freshers and managing the design sector for social media posters for the club events

Miscellaneous

- Prof. Piyush Rai, based on the performance in screening test, offered to switch to Advanced Track of the course ESC101 - Fundamentals of Computing attended by over 450 freshmen
- Co-mentored "Computational Astrophysics", an SnT summer project under Astronomy Club IITK for 20+ mentees in the domain of computational techniques used in simulations, data processing and experimental analysis 
- Built a python package for scraping linkedin comments and extracting relevant information from them. Repository on #1 result for Google search query of "Linkedin Comment Scraper" 
- Mentored JEE students on Chemistry during pandemic for a startup, Edvizo in 2020 
- One-on-one mentored a JEE student (now in IIT Roorkee), as part of the CovEd India initiative in 2020 
- Performed street play(*nukkad natak*) and mime act in inter-hall competition Galaxy '20 in front of 100+ live audience
- Qualified among the 30 slots for cricket in Compulsory Physical Activity (CPA) 2019 among trials conducted for 100+ students