ABHISHANT KUMAR | 19IM10001
INDUSTRIAL ENGG. (B.Tech 4Y)

EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2023	B.TECH	IIT Kharagpur	8.53 / 10
2019	HSC (Higher Secondary Certificate)	Shri Krishna Ramruchi College, Barbigha	87.2%
2017	SSC (Secondary School Certificate)	St. Mary's English School, Barbigha	10 / 10

INTERNSHIPS

Research Internship - Reinforcement Learning | Tata Consultancy Services   [May '22- Jul '22]
- Worked on creating an efficient **scheduling system** for a real-like railway station using python on **Flatland 3.0** simulation environment
- Applied **heuristic algorithms** like earliest arrival, shortest path and amalgamation of the two to minimize total delay and make-span time
- Implemented the **Duelling Deep Queue Network** architecture which reduced total delay and make-span time by **20%** over other methods

Software Development Internship | Helper4U   [Nov '21- Feb '22]
- Worked in a **3 member** team to develop an application (**1500+** daily active users) to help domestic helpers connect with employers
- Developed the front-end of the android application using **Java** with the backend server in **PHP**, which is hosted on **AWS** server
- Created features like notifications using **Firebase** Cloud Messaging, visiting card, communities, and trainings for tutorials and certifications

PROJECTS

Software Development | Defence Research & Development Organisation (DRDO) & IIT Kharagpur   [Aug '22- Ongoing]
- Developing a **cross platform web application** to serve as an important tool for **Indian Air Force** for air transport loading and scheduling
- Improvising the front-end of the application using **Angular** and Angular materials for input parameters which is migrated to the database
- Using **flask** for creating API to perform CRUD operations on the **PostgreSQL** database, for integration with the front-end of the application

Genetic algorithm for bank-lending decisions using metaheuristics | Optimization and Heuristic Methods Term Project   [Mar '22]
- Developed an efficient algorithm that **amalgamates** the advantages offered by Genetic Algorithm and Particle Swarm Optimization
- Implemented **single point crossover** to find neighbourhood solutions and **flip-bit mutation** to allow global search for feasible solutions
- Achieved optimal solution **3.5 times** faster with best fit score of **3.1854** in the amalgamated algorithm, as compared to parent algorithms

AI-based Chess Player   [Apr '21]
- Developed an AI-based chess player in **C++**, an interactive game which can be played against the application through the terminal
- Implemented **minimax algorithm** to decide moves against the player. and **alpha-beta pruning** to optimize the runtime of the game
- In each state, the points gained after performing any of the stored possible legal moves for the pieces is compared to select **optimal** move

COMPETITION/CONFERENCE

Search Engine for Data Structure and Algorithm problems | Algozenith Hackathon   [May '22]
- Prepared a dataset containing **2200+** dsa problems from multiple coding websites using Selenium and BeautifulSoup python library
- Implemented **TF-IDF algorithm** and calculated **cosine-similarity** values to obtain the most relevant results based on user entered query
- Used **ejs, expressJS** for front-end, **nodeJS** for back-end, **MongoDb Atlas** for handling database and **Heroku** for deploying the website

Music Popularity Prediction | Open IIT Data Analytics Competition | IIT Kharagpur   [Feb '21]
- Built a machine learning model to predict the **popularity** of a music track for maximum selling, based on **14** song characteristics
- Introduced **5+** new variables with superior predictive power by **feature engineering** using EDA and backward elimination technique
- Achieved weighted f1 score of **0.82** by devising an **ensemble** based classifier with XgBoost and Random Forest as base models

SKILLS AND EXPERTISE

Programming Languages: C/C++, Python, Java, JavaScript
Frameworks/ Libraries: numpy, pandas, matplotlib, flask, scikit-learn, Angular, ReactJS, ExpressJS, nodeJS
Software: Android Studio, MATLAB, Cplex, PostgreSQL, Jupyter Notebook, SolidWorks, Google SketchUp, Git &Github, Microsoft Office

AWARDS AND ACHIEVEMENTS

- Stood among the **top 1.5%** of the candidates who appeared for the JEE Advanced, 2019 examination by securing All India Rank **3486**
- Stood among the **top 0.4%** of the candidates who appeared for the JEE Mains, 2019 examination by securing All India Rank **4682**

COURSEWORK INFORMATION

Departmental: Optimisation and Heuristic Methods* | Simulation* | Operations Research | Information Systems* | Engineering Economy
Costing and Accounting | Financial Engineering | Product Development | Project Engineering and Management
Non-departmental: Programming and Data Structures* | Design and Analysis of Algorithms | Machine Learning Foundations and
Applications | Probability and Statistics | Linear Algebra | (*- Theory & lab)

POSITIONS OF RESPONSIBILITY

Vice-captain | Hockey | Inter Hall Sports & Games 2022
- Responsible for selection, training, and mentoring a team of **14 players** representing Lal Bahadur Shastri Hall of residence
- Managed a finance of **Rs. 50000+** for the team and led the team to finish at 4th position out of 11 teams in the tournament

EXTRA CURRICULAR ACTIVITIES

- Developed an **Android application** for the campaign of the winner of the Vice-Presidential election 2022, Technology Students Gymkhana
- Volunteered for **Young Innovators Program** organized by Branding and Relations Cell for encouraging youth to solve real-life problems
- Earned **B-certificate** and attended Annual Training Camp in 1 Bengal EME unit, NCC (National Cadet Corps) during the term 2019-21

!self declaration by the student