

Deepak Kumar Singh

+447586236427 | edeepak.mithu@gmail.com | LinkedIn | Github | Codeforces | 38 Mary Datchelor Cl, London

Professional Summary

Driven Result-oriented Software Developer with a Master's in Computer Science Focusing on Artificial Intelligence and a Bachelor's in Communication and Computer Engineering. Experienced in Python, Django, PostgreSQL and microservice successfully delivering impactful projects such as dynamic rate management applications or Treebo Hotels and cutting-edge Chess Engine. Strong background in machine Learning, Data analysis and API development, Complemented by notable achievement in coding competitions.

Education

Masters in Computer Science (Artificial Intelligence)

August 2022 - August 2023

University Of Nottingham

Nottingham, UK

- Graduated with Merit 69%
- Core Modules: Data Science and Machine learning, Human-AI Interaction, Linear and Discrete Optimization, Mixed Reality, Research Methods, Advanced Computer Networks
- Achieved distinction in the final MSc project by proposing two advancements for an existing MCTS-based chess engine and evaluating their performance, with details and links available in the projects section.

Bachelor of Technology in Communication and Computer Engineering

August 2017 – May 2021

The LNM Institute of Information Technology

Jaipur, India

- Graduated with a GPA of 7.12
- Core Modules: DBMS, OS, Computer Networks, Statistics and Probability, Linear algebra, Multivariate Calculus, Data Structures and Algorithms

Experience

Software Engineer | Python, Django, MongoDB, Microservices

January 2021 – August 2022

Treebo Hotels

Bengaluru, India

- Developed Rate Manager application at Treebo Hotels, enabling dynamic rate adjustments based on room types and implementing a flexible pricing system for specific dates and room categories.
- Created a Catalog system for efficient management of hotel details, including room types, quantities, base prices, and floors.
- Leveraged skills in Python, Django and MongoDB to develop an application that enabled customized pricing rules by room type and date range. Designed and built a database-driven system using Flask, React and MongoDB to centralize all hotel listing details in one place.
- Rate Manager increased revenue per room by 10%. Catalog reduced listing management time by 50% and decreased errors.

Software Engineer Intern

July 2020 – December 2020

Coding Ninjas

Delhi, India

- Developed a robust platform for solving and implementing data structures and algorithms questions, providing users with a comprehensive learning resource.
- Conducted thorough research, analysing interview experiences from various companies to curate a diverse and relevant question bank focused on data structures and algorithms. This effort ensured the availability of high-quality content for learners.
- Spearheaded the testing phase by implementing the testing solution for the questions, ensuring the accuracy and functionality of the content.

Projects

Chess Engine | Deep Learning, MCTS, Reinforcement learning

June 2023 – September 2023

- Led a research project exploring modifications to the Monte Carlo Tree Search (MCTS) algorithm to improve performance in the opening phase of chess games.
- Tested the impact of integrating opening databases and adjusting the exploration constant on the results between standard MCTS and modified MCTS algorithms.

- Developed variants of MCTS that incorporated opening databases (DM-MCTS) and increased exploration (IEC-MCTS). These were tested against the standard MCTS in 100 chess matches.
- DM-MCTS achieved a 56% win rate over standard MCTS, demonstrating the benefits of opening databases. Adjusting the exploration constant in IEC-MCTS was less effective, achieving just a 15% win rate. The research validated the potential of modifications like opening databases to expand the capabilities of MCTS in chess.

Credit Risk Analysis | *Scikit-Learn, EDA, Logistic Regression, Decision Tree*

June 2023 – September 2023

- Implemented a credit scoring model using predictive modelling techniques to evaluate the creditworthiness of individuals seeking credits
- Focused on predicting whether credit extended to applicants would likely result in profit or losses for the lending companies.
- Developed and Utilized a dataset with credit details and encompassing features like age, education level, income, debt metrics and past default status.
- The model achieved 85% accuracy predictive creditworthiness of individuals.

Hand Gesture Recognition | *ANN, Random Forest, LSVC*

January 2023 – March 2023

- Developed a hand gesture recognition system using the acceleration signals of hand movement in three axes (x, y and z). The primary goal was to identify four different hand gestures libraries.
- Recorded my data using an accelerometer app. Removed noise and extracted Energy and Entropy from signals as features. Developed and optimized an ANN model through iterative training.
- The model achieved 100% accuracy in recognizing the 4 specified hand gestures.

Emotion Identification | *KNN, Feature Selection, DWT (Discrete Wavelet Transform)*

April 2020 – December 2020

- Worked on identifying emotions from EEG signal data of 32 nodes attached to their head while watching 40 different videos for 40 persons.
- Extracted Energy and Entropy of the signals as features using DWT(Discrete Wavelet Transform). Developed a KNN model and calculated valence-arousal values to identify emotions.
- The model achieved 87% accuracy in detecting emotions on the valence-arousal scale.

Recommender Chatbot for Restaurants and Movies | *NLP, TF-IDF, Intent Matching*

March 2023 – June 2023

- Developed a multi-purpose chatbot capable of providing personalized recommendations based on location, rating filter and cuisine types. Also gives movie recommendations based user's favourite movies.
- It is the combination of basically 2 chatbots but it automatically detects whether the intent matches the movie or restaurant chatbot.
- The chatbot successfully provides customized restaurant and movie recommendations based on user inputs and preferences

Technical Skills

Programming Languages: C++, Java, Python, R, HTML + CSS

Databases: SQL, NoSQL, PostgreSQL, MongoDB

Frameworks: Fast API, Flask, Django, Spark, Spring Boot, Pandas, NumPy, TensorFlow, OpenCV, Selenium, Jira

Data Analysis Tools: SQL, Tableau, Power BI, Excel, D3.js

Data Science: Data Cleaning, Data Analysis, Machine Learning, Deep Learning, NLP, Reinforcement Learning,

Infrastructure & Tools: Docker, Kubernetes, AWS, RabbitMQ, Micro-service Architecture, Jenkins, GitHub, Bitbucket

Other Tools: Linux, Unix, Unit Test, Agile Development, Software Development, Relational Databases

Soft Skills: Collaborative, Confident, Innovative, Problem-Solving, Taking Initiative

Achievements

- Qualified for Google Code Jam 2021 and 2020
- Secured 517 rank in Codeforces Round 707 (Div. 2, based on Moscow Open Olympiad in Informatics) out of 25000 participants
- Secured 1306 rank in Codeforces Round 653 (Div. 3) out of 81000 participants
- Finished Half Marathon(21.1KM) in Hyderabad Sports Marathon