



Amitesh Rana

Roll No.: B21CH039

B.Tech in Chemical Engineering

Minor in Management

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Portfolio

EDUCATION

Degree/Certificate	Institute	CGPA/Percentage	Year
B.Tech. (CHE)	Indian Institute of Technology Jodhpur	7.14 (Current)	2021-2025
Class XII(CBSE)	Archies Higher Secondary School, Kanpur	87.4%	2019
Class X(CBSE)	Archies Higher Secondary School, Kanpur	83.6%	2017

EXPERIENCE

Machine Learning-Driven Photocatalytic Reactor Design and Performance Prediction for Dye Degradation

WEYA.AI

June 2024 - August 2024

- Designed and optimized reactor systems (Continuous Stirred-Tank Reactors and packed bed reactors) using machine learning algorithm, **Linear Regression**, to model photocatalytic degradation of methylene blue, achieving degradation efficiencies exceeding 90% within 6-7 hours with TiO₂, Ag/TiO₂, and Au@Ag/TiO₂ catalysts.
- Analyzed extensive datasets of over **50,000** points through UV-visible spectrophotometry, leveraging **data preprocessing** and feature engineering to enhance model accuracy for degradation rate prediction..
- Developed predictive machine learning models using Linear Regression to forecast dye degradation efficiency, reducing prediction errors by 15% and enabling data-driven optimization of reactor performance and scaling.
- Enhanced reactor configurations through ML-driven insights, improving catalyst recovery by 25% in packed bed reactors and operational stability by 20% in Continuous Stirred-Tank Reactors.
- Delivered actionable insights and reports by integrating Linear Regression analytics into reactor design workflows, driving cost-effective scalability and innovation in photocatalytic reactor systems..

PROJECTS

SkyCast: React Weather App

April 2024 - June 2024

React.js, Material-UI, JavaScript, OpenWeather API

- Developed SkyCast, a responsive weather application using React.js and Material-UI, integrating the OpenWeather API for real-time data.
- Implemented 6-day weather forecasting with a 3-hour interval, featuring location-based search and an intuitive UI.
- Optimized API calls for efficient data fetching, ensuring smooth performance, fast load times, and improved user experience.
- Planned enhancements include TypeScript conversion, unit testing, geolocation-based weather, and dark mode support.

International Debt Analysis and Insights Generation

March 2024 - April 2024

SQL, MySQL, Python, Data Analysis, Data Visualization

- Queried and analyzed international debt data from The World Bank using SQL, extracting key insights on global debt distribution, principal repayments, and financial indicators.
- Developed optimized SQL queries to calculate total debt, highest-indebted countries, and average debt trends across financial metrics. interactive visualizations in Python (Matplotlib, Seaborn) to present national and regional debt trends from 1970 to 2015, aiding data-driven decision-making.
- Generated actionable insights on debt management and financial sustainability, presenting findings through reports and dashboards.

Predictive Analytics for Advertisement Campaign Effectiveness using Logistic Regression

September 2023 - Dec 2023

Python, Logistic Regression, Data analysis, Data- visualization

- Developed a **Logistic Regression** model to predict user ad clicks with high accuracy, leveraging a fictional dataset for analysis.
- Analyzed feature impact, identifying age as the most significant variable influencing the likelihood of ad clicks, offering actionable insights for targeted campaigns.
- Addressed feature engineering challenges, including the limitations of Recursive Feature Elimination due to the use of dummy variables.
- Demonstrated model versatility for applications such as predicting future user behavior, optimizing advertising budgets, and identifying key target audiences.

TECHNICAL SKILLS

- Coding / Programming:** C, C++, Python, SQL, MATLAB, JavaScript, Shell Script / Bash Script
- Tools & OS:** AWS, ASPEN PLUS, Excel , Power Bi, Git, Jupyter Notebook, Google Colab, Advanced Excel, Linux/Ubuntu, MacOS
- Web Development:** HTML5, CSS3, JavaScript, ReactJS, Figma
- Other Skills:** Finance, Accounting, Management, UI/UX

ACHIEVEMENTS

- Ranked 12th out of 4,000+ users on GeeksforGeeks from college, placing in the top 0.35% based on overall coding score.** 2024
- 5-Star Coder on HackerRank and GeeksforGeeks in C++.** 2024
- Master Badge in Recursion and Dynamic Programming on Coding Ninjas, awarded to the top 0.01% of users.** 2024
- Advanced to Round 2 of Flipkart Grid 5.0 and 6.0, competing against thousands of participants.** 2024

EXTRA CURRICULARS

- Head of Exhibition Vertical, PROMETEO - Annual Tech Fest of IIT Jodhpur** Led the exhibition vertical, *coordinating with high-ranking stakeholders and the entire BSF unit for the successful execution of the fest, ensuring smooth operations and high engagement.*
- Assistant Head of Events Vertical, IGNUS - North Western India's Largest Cultural Fest, IIT Jodhpur** Assisted in managing and coordinating a wide range of events, overseeing logistics and event execution, contributing to the fest's success with over 10,000 attendees.