DEV PATRA J21IMT614
I.Mtech (B-tech+M-tech) Chemical Engineering (Major) Material Eng. & Polymer (Minor)
Institute of Chemical Technology Mumbai **Birthdate** : **7th OCT 2003**

Address:-
Flat-2, Shivanand Appt,
Ravindra Nagar,
Near Mohadi Road
Jalgaon-425001
☎:9021119440
Email: j21imt.dk_Patra@stumarj.ictmumbai.edu.in
https://devpatra07.github.io/ (Visit Personal Website for More & latest Info.)

Career Objective: As a Chemical Engineering student with a unique combination of programming, research, and modeling experience, I bring interdisciplinary strength and practical insight. I aim to contribute to challenging projects where I can apply my skills to deliver innovative and impactful solutions.

Educational Qualifications (Pre-University)

Examination	Institution (name, place, state of Institution)	%Marks
S.S.C. (2019)	St. Teresa's Convent Higher Secondary School, Jalgaon, Maharashtra.	86.80
H.S.C. (2021)	Chatrapati Shivaji Junior Science College, Jalgaon, Maharshtra.	89.83

Educational Qualifications (ICT)

Trimester	%Marks / SGPA	CGPA	Trimester	%Marks / SGPA	CGPA
I			VIII		
II			IX		
III			X		
IV			XI		
V			XII		
VI			XIII		
VII			XIV		

ABOUT ME

Technical Palette: Python, MATLAB, DWSIM, CATIA, R, ChemDraw 3D, Plotdigitizer, EndNote, Windows, Excel
Languages:

- Full Professional Proficiency – English
- Elementary Proficiency – Hindi, Marathi
- Native Proficiency – Bengali

Work Domain:
Neural Network Model Predictive Control & Control Systems (PID), Fault Detection & Diagnostics, GUI Development, Mathematical Modelling, Thermodynamic Modelling, Artificial Neural Networks, Optimization & Algorithms, Artificial Intelligence / Machine Learning (AI/ML)
Skills: Critical Thinking, Communication, Problem-Solving, Project Management, Leadership
Interests: Designing (Web/GUI), Reading

DEV PATRA J21IMT614
I.Mtech (B-tech+M-tech) Chemical Engineering (Major) Material Eng. & Polymer (Minor)
Institute of Chemical Technology Mumbai **Birthdate** : **7th OCT 2003**

WORK EXPERIENCE

Reliable Process Design Solution (RPDS), Pune, Maharashtra
Data Analytics Intern **March 2024 – June 2024**

- Spearheaded the implementation of NN-MPC, traditional MPC, and optimized PID control systems in batch polymerization reactors, resulting in a **faster cycle time**.
- Achieved **70% improvement in setpoint settling time** through optimization of PID using Differential Evolution algorithms.
- Developed intuitive GUIs using Tkinter and web apps with Streamlit, enhancing user experience and automation for industrial tasks.
- Conducted comprehensive fault analysis on the Tennessee Eastman Process using AI/ML, identifying around **20 faults** with high accuracy.
- Demonstrated ownership and rapid adaptation to advanced modeling tasks, showcasing strong interdisciplinary and collaborative work ethic.

Defence Institute of Advanced Technology (DIAT), DRDO, Pune, Maharashtra
Research Intern **September 2023 – October 2023**

- Developed a comprehensive ML and AI-based framework to predict the removal efficiency of heavy metals from industrial wastewater using biochar.
- Designed and tested **12 hybrid ANN-metaheuristic models** (CSA-ANN, TLBO-ANN, PSO-ANN, etc.) and **22 ML models**, including SVM, GPR, and ensemble methods like LSBoost.
- Implemented **10+ nature-inspired optimization algorithms** (PSO, TLBO, Cuckoo Search, etc.) to fine-tune ANN predictions and compare modeling strategies.
- Collaborated with **DRDO and VIT, Vellore** under the guidance of **Dr. Amrita Nighojkar** and co-authors from VIT, contributing to a conference paper at ICMLDE 2024.
- Delivered a high-impact and interdisciplinary project, integrating computational intelligence with environmental engineering solutions.

PUBLICATIONS

Research Articles

1. *Dev K Patra, Debashis Kundu* – "Generalized Pitzer-Debye-Hückel (PDH) Framework for the Deep Eutectic Solvent Assisted Extraction of Europium (III), Americium (III), and Uranium (VI)", Taylor & Francis

2. *Dev K Patra, Debashis Kundu* – "Systematic Exploration of COSMO-SAC-PDH and EXT-UNIQUAC-PDH Models for Rare-Earth Element Leaching in Deep Eutectic Solvents", American Chemical Society (ACS)

Book Chapter

1. *Dev K Patra, Debashis Kundu* – "Deep Eutectic Solvents in Dissolution of Lanthanides, Actinides, and Recovery of Value-Added Materials from Electronic Waste", Elsevier

CONFERENCE

Presented paper titled *"Predictive Models for Removing Heavy Metal Water Pollutants with Biochar: Exploring Neural Networks and Machine Learning"* at **ICMLDE 2024**, Dehradun

DEV PATRA J21IMT614
I.Mtech (B-tech+M-tech) Chemical Engineering (Major) Material Eng. & Polymer (Minor)
Institute of Chemical Technology Mumbai **Birthdate** : **7th OCT 2003**

PROJECTS

Work Under Review:

NAMoSTe Software (Novel Atomic & Molecular Structure Explorer)

(Intellectual Property Secured; Registered with the Copyright Office, Government of India – Extracts from the Official Register of Copyrights)

NAMoSTe is a next-generation software designed for the intuitive creation and visualization of complex long-chain polymers in 1D, 2D, and 3D. While helping advanced molecular modeling capabilities, it empowers researchers to precisely construct and analyze polymer architectures, making it an essential tool for innovation in computational chemistry and materials science.

EXTRACURRICULAR

Web Design Head & Treasurer – Techfest AAKRITI 1.0

Led the web design team, creating an interactive digital platform, while **managing finances** to ensure smooth planning and execution of the tech festival.

Editor – MARJAL (ICT Mumbai, MARJ Campus)

Edited *MARJAL*, the biannual magazine of ICT Mumbai, MARJ Campus, for **two years**. Oversaw content creation, managed a team of writers, and ensured high-quality publications.

WHAT I BRING TO THE TABLE

As a Chemical Engineering student with a unique blend of coding, research, and data-driven problem-solving skills, I bring a rare combination of depth and interdisciplinary versatility. I offer *quick learning* and a deep commitment to *teamwork* and *results*. Whether it was *working late* with my team at DRDO to perfect biochar AI models or improving industrial control systems at RPDS under tight deadlines, I've always been driven by passion and purpose. I don't just complete tasks—I take *ownership, collaborate* with others, and ensure that outcomes create real value. I'm adaptable, enthusiastic, and eager to contribute meaningfully to every project I take on.