

NAMAN CHOUDHARY

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OBJECTIVE

Detail-oriented Data Scientist with 2 years of experience specializing in Artificial Intelligence, Machine Learning, Deep Learning, NLP, LLMs, Data Visualization, and data-centric decision making seeking full time roles starting May 2025

EDUCATION

Carnegie Mellon University

Master of Science in Mechanical Engineering (Artificial Intelligence focus) **GPA: 3.96/4.0**

Pittsburgh, PA

Aug 2023 - May 2025

- Relevant Coursework: Mathematical Foundations for ML, Computational Foundations for ML, ML and AI for Engineers (Teaching Assistant), Engineering Computation (C++), Deep Learning, Advanced NLP, Generative AI
- Teaching Assistant for Mathematical & Computational Foundations for ML in the Machine Learning Dept. at CMU

Delhi Technological University

Bachelor of Technology in Mechanical Engineering **GPA: 8.75/10**

Delhi, India

Aug 2017 - Jul 2021

EXPERIENCE

Machine Learning Dept. at CMU

Pittsburgh, PA

Graduate Student Researcher, under Dr. Ameet Talwalkar

Sep 2024 - Present

- Expanded the Unified PDE Solver (UPS) by integrating Geo-FNO to handle irregular geometries for solving PDEs, achieving a 2.7x lower testing error compared to U-Net interpolation on irregular pipe flow datasets
- Automated Python & OpenFOAM scripts to generate datasets with over 2,500 irregular pipe deformations for 2D Flow

O-I Glass

Pittsburgh, PA

Data Science Intern

May 2024 - Aug 2024

- Transformed a 25-sheet Excel model into a 3000-line Python code, achieving a 90% improvement in processing time
- Proposed and deployed an automated end-to-end data pipeline using SAP HANA, Microsoft Fabric, and Databricks, integrated with Azure ML along with a Streamlit based UI, saving 300+ hours annually and enabling future scalability
- Developed a CO2 emission projection tool by applying statistical techniques such as correlation analysis & EDA; presented the tool to CSO, CTO, & leadership team, guiding carbon reduction strategies and informing future investment decisions

ICF Consulting

Delhi, India

Energy Analyst

Nov 2021 - Jun 2023

- Developed models showing pathways to reduce import bill by \$20B & CO2 emissions by 60 MTPA via hydrogen adoption
- Collaborated across 3 teams: hydrogen, oil & gas, and power & RE, delivering more than 10 diverse client assignments
- Received the 'Bronze Award' due to contributions to a critical assignment for developing expertise in Hydrogen

SKILLS

Languages: Python, C and C++, OpenGL, LaTeX, SQL, Julia, OpenFOAM (C++)

Machine Learning & Deep Learning: Scikit-learn, Pandas, Numpy, Pytorch, SciPy, TensorFlow, CUDA, Azure ML

Natural Language Processing: Hugging Face Transformers, LangChain

Other tools: Excel, PowerPoint, PowerBI (Data Visualization), Cloud Environments (AWS, GCP), wandb, Streamlit

PROJECTS

Enhancing Diffusion Models with Physics-Informed Constraints

Jun 2024 - Present

Key Skills: Machine Learning, Physics Informed Models, Denoising Diffusion Models, Python, Generative AI

- Integrated physical constraints into denoising diffusion models improving sample adherence to governing equation by 20%
- Implemented recent algorithms to enhance model performance, achieving a 15% increase in sample generation accuracy
- Engineered datasets that respect underlying physical principles, reducing deviation in generated samples by 25%

Reinforcement Learning Framework for Financial Portfolio Management

Mar 2024 - May 2024

Key Skills: Deep Learning, Reinforcement Learning, Python, Financial Modeling, Time Series Forecasting, GCP, CUDA

- Benchmarked financial prediction accuracy using Adversarial Attention-based LSTM, establishing performance standards
- Explored OneNet, an online ensemble method, to develop adaptive solutions for concept drift in financial data
- Engineering a reinforcement learning framework to manage financial portfolios using market data, to assess P&L

Retrieval Augmented Generation (RAG) & LLM Integration for Q&A Systems

Jan 2024 - May 2024

Key Skills: Python, LangChain, Hugging Face Transformers, Streamlit, Large Language Models (LLMs), RAG System

- Orchestrated RAG & LLM integration, advancing accuracy in AI-driven Q&A, minimizing response hallucination
- Investigating Self-RAG to optimize adaptive retrieval and self-critique, enhancing generation factuality
- Devised interactive user interface with Streamlit, promoting user engagement through query processing

PUBLICATIONS

- Co-authored **8 publications** in reputed journals & international conferences on optimization of process parameters, numerical analysis & computational fluid dynamics (CFD), achieving **26 citations** | [Google Scholar Link](#)