Naman Jain

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EDUCATION

Indian Institute of Technology Kanpur, India   Expected May 2024
Bachelor of Technology: Materials Science and Engineering   *Current CPI: 7.7/10*

ACHIEVEMENTS

- Secured **All India Rank 5764** (top 2.3%) in Joint Entrance Examination Advanced 2020 i.e. IIT Entrance Level 2, among the **251 thousand** candidates
- Secured **All India Rank 6837** (top 0.6%) in Joint Entrance Examination Main 2020 i.e. IIT Entrance Level 1, among the **1.12 million** candidates
- **Olympiad Rank 18** in the International Reasoning and Aptitude Olympiad 2017 by Silver Zone
- Represented IIT Kanpur and secured **2nd** position at IITKgp's Composit'22, Case study competition on **EV** Vehicles
- Amongst **top 20 Nationalist** in the pitching competition – Ideathon 2021 by Entrepreneurship Cell, IITK
- Secured **rank 5 in TechWeek** 2021 by Science and Technology Council, IITK with 120+ participating teams

PUBLICATIONS

Machine learning enabled optical property prediction of thin films using spectra data extraction from scientific literature *Harsh Mishra, Naman Jain, Prof. Shikhar Misra*

Manuscript Submitted   Feb'24

RESEARCH WORK

Research Intern | SURGE 2022, IIT Kanpur | *Prof. Niraj M. Chawake*   May'22 - Jul'22
- Developed and implemented a **mesoscale elastoplastic model** to simulate creep rupture behavior in Ti alloys
- Successfully replicated key aspects of creep phenomena, including **temporal regimes**, damage statistics, and strain localization leading to catastrophic failure
- We use **Random Forest** regression trained over the **simulation data** for predicting the creep failure time

Segmentation of Tomographic Image Data of Functional Materials | *Prof. Krishanu Biswas*   Jan'23 - Apr'23
- Semantically segmented Tomographic image data depicting microstructures of materials by combining machine learning methods and conventional image processing steps tested with different **U-net models**
- For training the **CNNs**, ground truth information was derived from 3DX-ray diffraction (**3DXRD**) measurements
- Grain boundary images enhanced by the CNNs were then segmented using a marker-based **water-shed algorithm**

Energy Efficient Building Design using EnergyPlus Simulation | *Prof. Aakash C. Rai*   Jan'23 - Apr'23
- Studied the impact of **global warming** on hot & cold degree days in major indian cities using EnergyPlus simulation
- **Modeled** a building to study effects of variation in construction items/material, fenestration surface, sun/wind
- Evaluated plots of radiation and solar heat gain, surface heat transfer rate, sensible heat gain during different seasons

WORK EXPERIENCE

AI Chatbot Enhancement | LTIMindtree Ltd. | **Software Developer Intern**   May'23 - Jul'23
Received a **pre-placement offer (PPO)** for exceptional performance
- Developed AI features for a chatbot used for IP & patent management, using **Azure AI Cognitive services**
- Pilot test for replacing CQA model with Conversational Language Understanding model in MS **Language Studio**
- Built a **QnA generator** in python that periodically extracts data from website into a structured dataset in tsv file
- Established a **react API** channel to fetch username & profile picture from website and display it on chatbot iframe
- Engineered an optimal threshold value of confidence score to call for fallback using **AUC-ROC** curve
- Built a collaborative testing environment using **ngrok** to establish live local server, Azure bot & language services
- Standardized communication flow using react.js frontend, **node.js** backend to improve accuracy & response speed

FOUNDING EXPERIENCE

Co-Founder & UG-Convener | MatSoc – The Materials Society, IIT Kanpur   Jun'22 - Jul'23
- Established a 600+ member **Departmental Society** to engage & promote MSE research & technology awareness
- Headed a team of 20+ & organized Orientation, Farewell, 6 alumni talks & workshops, **Research Scholars' Day**
- Formulated an **annual structure** of events, project proposals, society's financial budgeting structure and rules
- Witnessed huge engagement in all events impacting **350+** UGs, **200+** PGs, 25+ professors and alumnus world-wide

PROJECTS

Territorial Attack – Android Game ⊙ ▶ | Game Development Club, IITK   Jun'21 - Aug'21
- Lead programmer in a team of 6, in developing a projectile shooter 2D android game in **C# using Unity engine**
- Coded multiple functionalities across **12** levels using Unity Documentation & Object oriented programming principles
- Published game on **PlayStore** with 800+ downloads & received invite from Game Development World Championship

3D WebGL Renderer ⊙ | CS360 Intro to Computer Graphics: Prof. Soumya Dutta   Aug'23 - Nov'23
- Engineered a Graphics Renderer Engine in **JS** to visualize vertex data using **webGL** and **path tracing** technique
- Developed features- model loading, material customization, **modular lighting**, camera system, texture mapping
- Implemented **Blinn-Phong lighting** model & designed UI Widgets, to create, load, and manipulate real-time

Robo Line Detection AI ⊙ | EE604 Image Processing: Prof. Tushar Sandhan   Aug'23 - Nov'23
- Developed a robust line detection algorithm for real-world environments that **detect border lines** in tile images
- Implemented Gaussian Blur, contrast stretching, **Canny edge** detection algorithms to accurately detect border lines
- Applied image processing tools to solve practical challenges in tile arrangement in a dataset of **5000+ images**

Regression Analysis ⊙ | Stamatics, IITK   May'22 - June'22
- Studied several regression techniques like **non-linear**, polynomial regression and panel data regression
- Processed the sales data of **105 months** of a champagne company & developed a ML model to predicts future sales
- Employed **ARIMA/SARIMA** based time series analysis and compared from real world sales statistics

POSITION OF RESPONSIBILITY

Coordinator | Game Development Club, IIT Kanpur   May'22 - Apr'23
- Leading a 3-tier team of 40+ members to foster GameDev by organizing **game jams**, workshops & projects
- Spearheaded the conduction of GameDev **Bootcamp** for 1200+ students involving 4 workshops and final project
- Played a pivotal role in promoting the stature of GameDev from a society to a **club** in the SnT Council, IITK
- Mentored multiple specialized projects on Gamification, **Augmented Reality** & AI games using Unity Game Engine
- Boosted the reach in student community by **150%** in workshops & socials with campaigns like GameDev Insights

SKILLS | COURSEWORK

Languages: C/C++, C#, Python, JavaScript/TypeScript, HTML/CSS, LaTeX

Frameworks/Libraries/Tools: Azure, React, Node.js, Tensorflow, Unity, Pandas, Git/GitHub

Courses:

Nature and Properties of Materials	Structure and Characterization of Materials	Science and Tech of Thin Film and Device Dabrication	Electronic and Mangnetic Prop of Materials
Manufacturing processes	Phase Transformations	Intro to Biomaterials	AI/ ML in Materials Engineering
Energy efficient Building Design	Object-Oriented Programming	Heat treatment & Surface Hardening	Linear Algebra & Ordinary Differential Equations
Dislocations & Plasticity	Probability & Statistics	Intro to Machine Learning	Image Processing

LEADERSHIP | VOLUNTEER-SHIP

Volunteer | Joy Foundation Society - An old age home (Hyderabad, India)   Jul'23 - Aug'23
- Formulated an annual events structure and steps to be implemented for **raising funds** and boost social reach
- Articulated 5+ articles on fund offerings & case studies & designed an **yearbook**, gathering every event since 2018

Candidate for General Secretary, Science and Technology, IITK | General Elections 2023   Nov'22 - Feb'23
- Coordinated a campaign team of 60+ and, approached **4000+** UGs & **1500+** PGs to spread awareness of **SnT**
- Narrowly missed victory by **9 votes** (0.25%) **out of 3600** active voters and received 1564 votes in favour

REFERENCES

Shikhar Misra </> | Assistant Professor, Materials Science and Engineering, IIT Kanpur
- Specialization: Functional thin films, epitaxy, ceramic nanocomposites, optical metamaterials

Niraj M. Chawake </> | Assistant Professor, Materials Science and Engineering, IIT Kanpur
- Specialization: Creep, Mechanical Behavior of Materials, Solid-State Sintering