

SHUBHAM GUPTA

Major: Chemical Engineering | Minor: Industrial & Management Engineering and Linguistic Theory

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EDUCATIONAL QUALIFICATION

Year	Degree/Certificate	Institute	CPI/%
2018 - Present	B.Tech.	Indian Institute of Technology Kanpur	8.2/10.0
2017	AISSE	Nalanda Academy, Kota	85.4%
2015	AISSE	S.R. Public School, Kota	10.0/10.0

SCHOLASTIC ACHIEVEMENTS

- Awarded the **Kishore Vaigyanik Protsahan Yojana (KVPY)** Fellowship by the Department of Science and Technology, GOI
- Achieved an **All India Rank 11** in **Indian National Earth Science Olympiad** conducted by Geological Society of India, GOI
- Attended **Vijyoshi** National Science Camp, mentored by Nobel laureates, organised by KVPY & INSPIRE, held at IISER Kolkata
- National Talent Search Examination (**NTSE**) first stage qualified from Rajasthan, conducted by NCERT, Government of India
- Attended **Training Camp** of Indian National Earth Science Olympiad, organised by **Geological Society of India**, Govt. of India

INTERNSHIP EXPERIENCE

ZEVI.AI | NLP Engineer Intern | Advanced AI Team

July'21-Ongoing

OBJECTIVE	• Construct an In-Site search engine solving the conversion problem (increase purchases) for online shopping
STRATEGY	• Accessed user search & store product data of several stores with 210-450 variables for exploratory data analysis • Engineered ngram queries & labels, embedded them using transformer & tracked 10+ ML models for classification • Moved classification search to AWS-Lambda & created autocomplete, query suggester & spell-checker modules
RESULTS	• Reduced latency of search codebase by over 70% to less than 200 milliseconds by use of optimal data structures • Improved test accuracy for ML model by over 60% using MLP Classifier to compute probability for search queries • Assisted the company in converting 5+ new online stores over 2 months from the USA, the UK, Germany & India

RESEARCH PROJECTS & PUBLICATION

*publication awaited **course project

Genetic theory of code-switch evolution (Prof. Mayank Singh, CSE Dept., IIT GN)*

Sept'20-Ongoing

OBJECTIVE	• Generate code-mixed sentences using English and corresponding Hindi sentences using Genetic Algorithm
STRATEGY	• Formulated initial population of 19780 code-mixed sentences by transliteration (Devanagari to Roman) & switch • Translation for mutations was incorporated using googletrans ; crossover was implemented using a word-aligner • Operated the GA over 100 generations for each sentence, LaBSE transformer was used as embedder for selection
RESULTS	• Perplexity of our model came out to be 4098 , beating the Microsoft April'21 results by a difference of 52 points

Modelling and Simulation of Electrochemical Systems (Prof. Raj Pala, CHE Dept., IIT K)

Jan'21-April'21

- Analysed finite difference method to discretise coupled ODEs of chemical reaction to achieve net **negative carbon emission**
- Remodelled **2 systems** (Cu electrowinning & fuel cell) using **Butler-Volmer** equation to infer electron density at electrodes
- Considered activation, ohmic, & concentration polarisation to create the 2 systems with **simulation and experiment gap < 5**

Text-Based Analysis of Financial Constraints (Prof. Suman Saurabh, IME Dept., IIT K)

July'20-Aug'20

- Objective was to quantise the **financial constraints** and study their impact on small-capital companies in the Indian market
- Manoeuvred NLP techniques like **tokenisation & lemmatisation** to process **400+** machine-readable annual reports of firms
- Critiqued between the **equity, debt, private-placement** focused delay of investment by finding **180+ specific words** in data

Portfolio Optimization using Markowitz Model (Prof. Shankar Prawesh, IME Dept., IIT K)**

Feb'21-April'21

- Inspected the distribution and time-series characteristics of **NIFTY50** data using **Shapiro Wilk Test** and **Chi-Square Statistics**
- Modelled a Markowitz Portfolio to assign weights to the stocks and generated the **Efficient Frontier** with **5+ years** of data
- Used **SML** to determine under/overpriced stocks, tested portfolio virtually realising **20% profit** on **INR 10 million** of capital

LEADERSHIP POSITIONS

Coordinator | Finance & Analytics Club

April'20-April'21

LEADERSHIP	• Lead a team of 25 members , managed FB group of 2.6K members & a budget of INR 95K to promote finance • Conducted many projects, discussions, competitions and workshops on various fields in finance and analytics
INITIATIVES	• Executed month-long workshops on Algo Trading, ML in Finance & Derivative Markets with 650+ participated • Organised 5 summer and 2 winter projects ranging from predicting stock prices to the fundamental analysis • Administered FinFest with various IITs which consisted of 2 workshops, 2 competitions , prizes worth 1.8 lakhs • Associated with 10+ organisations like WazirX, CareerBright, Finlatics for market simulation courses & projects • "Demystified Jargons" to simplify complex terms & "Intuitive videos" to explain historical financial episodes
IMPACT	• Encouraged the growth of financial literacy, investing and risk management amongst the campus community • Introduced a Pan-IIT Crypto trading competition influencing the campus community towards crypto-currency

Student Nominee | Department Undergraduate Committee | Chemical Engineering

April'20-Ongoing

- Advised **300+ students** about course curriculum & monitored the progress of **10+ academically weak students** of the dept.
- Fabricated a **web application** to generate multiple timetables of a semester & keeping preferences of **21 professors** intact
- Aided dept. to identify suitable students with appropriate background from **20+ dual and double conversion** applications

EXTRACURRICULAR ACTIVITIES

SOCIAL	• Student Guide: Mentored 4 freshman students on emotional & academic front for easy transition in college • Tech. Head , Department of Chemical Engineering: Designed and revamped the existing website of the dept.
MANAGERIAL	• Secretary, Games & Sports Council: Scheduled, supervised & judged Udghosh and inter-hall badminton matches • Counselling Service: Coordinated the orientation program for 900+ newcomers along with a team of 175 students
SPORTS	• BADMINTON: Won 2nd place at inter-hall badminton competition (Inferno) at IIT Kanpur, 2019