SAURABH KISHOR SONTAKKE

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Senior Undergraduate, Mechanical Engineering | **Minor:** Industrial and Management Engineering

ACADEMIC QUALIFICATIONS

Year	Degree	Institute	CPI/%
2018 - 2022	B.Tech Mechanical Engineering	Indian Institute of Technology Kanpur	**8.0/10.0**
2018	Higher Secondary	Rajarshi Shau Junior College (HSC)	**87.3%**
2016	Secondary	Sharda Dnyanpeeth Buldhana (SSC)	**97.6%**

ACHIEVEMENTS

- **National Finalist** of **Mitsubishi Cube Highways Hackathon 2021** challenge with 2 ideas among the best 21
- Secured **AIR 4987** and **AIR 3941** among 11 lakh and 2.2 lakh candidates in JEE Mains 2018 and JEE Advanced 2018
- Achieved **5 Star (Gold)** badge in **C++ programming** under the language proficiency track on HackerRank
- Recipient of the **MSCE High School Scholarship 2013** with 8th merit rank out of 126 in the district

INTERNSHIPS

ALPHA DERIVATIVES *Derivative Research* | Mentor: Ritesh Chavan (Co-founder)   *(July'21-Sept'21)*
- Studied the concepts of options market and futures market, basic trading strategies and hedging techniques
- Developed paper trading strategies involving **options, futures** and **equity** stocks of Indian capital markets
- Devised strategies based on **basis**, **open interest** and **greeks** namely **delta, theta, vega** and **gamma**
- Performed **risk analysis** and **back-testing** to hedge the portfolio and gain profits simultaneously

QUOLLAB *Equity Research* | Mentor: Krushi Bandi, CTM Quollab   *(June'21)*
- **Analyzed financial statements** of a cement manufacturing company and calculated its financial ratios
- Forecasted financial statements for upcoming **3 years** based on company news and management call meetings
- Studied the impact of **macroeconomic, internal** and **external factors** on the performance of the company
- Calculated intrinsic stock value using **DCF** valuation and competitive stock position using **relative** valuation method
- Estimated a **6% upside** in the **stock price** and an increase of **34%** in the **company sales** by the following year

PROJECTS

Inventory optimization of a multi-period dynamic-pricing system   *(May'21-present)*
Mentor: Prof. RRK Sharma, *Dept. of Industrial and Management Engineering, IIT Kanpur*
- Formulated a **mixed integer linear programming** method to solve a single item multi-period inventory problem
- Minimized the **operating cost** given the inventory cost, production cost, back-order cost, demand, setup cost and capacity
- Obtained the optimal values for **production, inventory** and **back-order** quantity variables for all time periods
- Developed a hybrid method by **variable elimination** and **back substitution** to save computational time

Blocks and Chains *(ACA Project, Dept. of CSE, IIT Kanpur)*   *(April'21-Sept'21)*
- Studied the structure and functioning of **blockchains, asymmetric encryption** and decentralized networks
- Developed codes for **proof of work mining** mechanism and implemented a **node** of blockchain in **NodeJS**

Investment Risk Management *(Coursera, guided project)*   *(July'21)*
- Compared monthly **returns, standard deviation** of Facebook, Amazon, Apple, Netflix, Google and SPX **stocks**
- Calculated beta, Treynor ratio and **VaR** of the stocks and visualized the results obtained using graphing tools

Inverse estimation of heater parameter profiles in radiative heating enclosures   *(June'20-Feb'21)*
Mentor: Prof. Malay K Das, Dr. Rahul Yadav, *Dept. of Mechanical Engineering, IIT Kanpur*
- Developed an **artificial neural network** to estimate mole fraction of participating gases and gas particle size
- Employed **genetic algorithm** to converge the population data to the most optimum parameter combinations
- Saved the computational time by an order of 10^3 while maintaining accuracy in the resulting parameter values

Influence of social parameters on individual well-being *(Course project)*   *(Nov'20-Dec'20)*
- Elicited social data of 50+ individuals and analyzed it to determine the most influential factors affecting well-being

TECHNICAL SKILLS

- **Programming Languages:** C++, Python, C, mySQL, JavaScript, GAMS, MATLAB
- **Software and Utilities:** NodeJS, VScode, GitHub, Latex, MS Excel

RELEVANT COURSEWORK   * Coursera

Macroeconomics	Probability and Statistics	Monetary Economics	Data Analysis with Excel*
Neural Networks and Deep Learning*	Data Structures and Algorithms	Manufacturing Planning and Control	Business metrics for data driven companies*

POSITIONS OF RESPONSIBILITY

Secretary: Research wing, Academics and Career Council   *(July'19-Apr'20)*
- Worked with a team of **15 students** on planning initiatives to promote research across the campus community
- Organized several talks and events on Policy Research, Climate Change, departmental research opportunities

Student Guide: Counselling Service   *(March'19-Apr'20)*
- Counseled **6 freshmen** personally in acclimating to college life during their mental and academic predicaments
- Assisted the Counselling Service with smooth conduction of **Orientation 2019** of **1000+ freshmen students**

EXTRACURRICULARS

- Represented school for **Chess** and **Athletics** (**sprinting-100m, 400m**) competitions **twice** at the **district** level