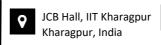


LAVISH SINGHAL

Pre-Final Year Undergraduate
Integrated Master's in Biotechnology and
Biochemical Engineering
Minor in Mathematics and Computing (M.sc 5Y)









EDUCATION			
Year	Degree/Exam	Institute	CGPA/Marks
2022	B. Tech and M. Tech (Dual Degree)	IIT Kharagpur	8.42 / 10
2017	CBSE	Vishva Bharti Public School	92.4%
2015	CBSE	Spring Fields Public School	10 / 10
COURCEWORK INFORMATION			

COURSEWORK INFORMATION

- Probability and Statistics
- Mass Transfer
- Environmental Biotechnology
- Python Data Structures
- Economics
- Bioinformatics

- Algorithms
- Biochemical Reaction Engg.
- Plant Cell and Tissue Culture
- Techno-Entrepreneurial Leadership
- Partial Differential Equations
- Stock Market Basics (Varsity Zerodha)
- Neuronal Coding for sensory information

- Programming and Data Structures
- Analytical Biochemistry
- Biochemistry
- Python and Statistics for Financial analysis
- Genomic Data Science and Clustering
- Technical Market Analysis (Varsity Zerodha)
- Trading Basics (ISB)

INTERNSHIPS AND PROJECTS

Genome Scale Metabolic Reconstruction and in-silico metabolic analysis

Supervisor: Dr. Amit Ghosh | Department of Energy Science and Engineering | IIT Kharagpur (May 2020 – July2020)

- Preparing Genome Scale Metabolic Model of *Geobacillus* LC300 leveraging modelSEED, COBRApy, MATLAB and COBRA Toolbox v3.0.
- Performed Manual curation using COBRApy, Pandas and Numpy libraries to rectify reversibility bounds, charge.
- Computational Techniques learned: RAST Server and modelSEED for Draft reconstruction model, COBRApy, Python for Data Science, COBRA Toolbox v3.0
 - Github link: https://github.com/lvis4/genome_model.git

Deep biosphere Database and Computational analysis of phylogenetic potential

Supervisor: Dr. Pinaki Sar | Department of Biotechnology, IIT Kharagpur (Dec 2019 –Jan 2020)

- Creating a database for the microbial consortia present in the deep biosphere, approx. 3000m below the earth's surface.
- Data mining FASTA files of raw sequences of the 16s rRNA amplicon sequence from the NCBI database.
- RNAseq Data Analysis using EXCEL for statistics for comparative analysis.

Techno-economic analysis and Scale-up Studies for efficient bio-ethanol production

Supervisor: Dr. Rintu Banerjee | Department of Agriculture and Food Processing, IIT Kharagpur (May2019–July2019)

- Developing strategies for optimization of lignin degradation, hydrolysis and fermentation for ethanol production from lignocellulosic biomass.
- Developing strategies and innovative solutions to build a circular bio-industry and performed Techno-economic analysis
 and scale-up analysis to understand the feasibility of scaling up of the technology.
- Significant achievements and outcomes:
 - Established pilot scale proof of concept and presentation of results.

WORK EXPERIENCE

Stock Market trading | Personal Portfolio Management | ICICIDIRECT | ZERODHA

- Actively managing seven-figure portfolio of stocks through long term investment based on fundamental analysis and Intraday square-offs based on technical analysis.
- Studied Candlestick pattern, financial statements, Pricing models (CAPM, APT), implemented Ichimoku clouds,
 Fibonacci retracement, Piotroski F –score indicators and have generated ROI of 10.8% in just 3 months.

COMPETITION/CONFERENCE

University Challenge | India Innovation Growth Programme (IIGP 2.0) (June 2019)

- Ideated a **biosensor for latent TB detection** using a Lateral Flow assay integrated with aptamers designed specific to LTB antigens.
- Built Financial Model, Roadmap, Business Model, performed Market Analysis and Scale-up strategy, for large-scale implementation of our product.

- Among top 40 teams in the University Challenge IIGP 2.0 organized by Department of Science and Technology (DST),
 Government of India, Lockheed Martin and Tata Trusts.
- Represented IIT Kharagpur in the downselect competition held at IIT Bombay.

Semi Finalist | Empresario '20 | Entrepreneurship Cell, IIT Kharagpur

- Collaborated and Ideated with Professor Somdeb Bose Dasgupta, Department of Biotechnology, IIT Kharagpur a biosensor for Latent Tuberculosis detection using Aptamer Technology and Lateral Flow Assay.
- Prepared a detailed technical summary, Executive summary and model validation reports.
- Reviewed literature to understand the scientific principles behind the product and performed in-depth market analysis and formulated a business model and scale-up strategy.

Equities Trading | StockMIND Season 7 '19 | ICICI Securities | VGSOM IIT Kharagpur

- Participated in a 5-day real-time trading event.
- Performed fundamental analysis, news analysis and built a stock portfolio and longed my position during 5-day virtual event.
- Secured 13th position amongst 54 participants from IIT Kharagpur and Vinod Gupta School of Management.

Captain, Product Design | General Championship | IIT Kharagpur

- Ideated a Sound based Fire Extinguishing Drone inspired by research conducted by DARPA.
- Performed SWOT analysis and feasibility strategies for implementation.
- Served as Product Design Captain for the JCB Hall team and prepared a structured report and presentation for the team.

8th SOF International Mathematics Olympiad 2014

• Secured **International Rank 246** in the final round of 8th SOF International Mathematics Olympiad in February 2015.

SKILLS AND EXPERTISE

Design software SOLIDWORKS 2016, MATLAB, ADOBE Photoshop CS6

LANGUAGES C, C++, python, R, HTML, CSS

Platforms and IDE Ubuntu 16.04, Benchling, PyMOL, MEGA-X, Jupyter, KITE by Zerodha, ICICIdirect

POSITIONS OF RESPONSIBILITY

Head | Student Welfare Group -SWG, IIT Kharagpur (April 2019- Present)

- Leading a team of 44 Members to address prominent student issues related to quality of on-campus student life.
- Organizing Campus-wide events like 'Campus tour', 'Welcome fresher' and Student Mentor Program for Freshers,
 Foresight for students to connect them to Alumni for guidance.

Core Team Member | Technology Adventure Society - TAdS, IIT Kharagpur (Aug 2018-March 2019)

- Organizing and managing adventurous, adrenaline-rich activities like 'Adventure Weekends' in campus.
- Organized, managed and successfully completed a Winter Trek to the Himalayas.

AWARDS AND ACHIEVEMENTS

Holding Department rank 3.

Secured a percentile of over **99.7%** in **IITJEE ADVANCED 2017** given by over **13,50,000** aspirants.

EXTRA CURRICULAR ACTIVITIES

- Served as a volunteer in the **National Service Scheme (NSS)** (2017-2019) and **won GOLD** in the **Annual Winter Camp** held by NSS.
- Certified practitioner of 'Heartfulness' a heart based meditation technique.
- Participated in Socio-cultural event 'Nukkad Natak' organized under Open IIT competition, IIT Kharagpur.