



LAVISH SINGHAL

Pre-Final Year Undergraduate
Integrated Master's in Biotechnology and
Biochemical Engineering



JCB Hall, IIT Kharagpur
Kharagpur, India



lavish4singhal@gmail.com



+918950381675



github.com/lvis4

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

COURSEWORK INFORMATION

- Probability and Statistics
- Python Data Structures
- Economics
- Bioinformatics
- Neuronal Coding for sensory information
- Algorithms
- Techno-Entrepreneurial Leadership
- Partial Differential Equations
- Stock Market Basics (Varsity Zerodha)
- Programming and Data Structures
- Python and Statistics for Financial analysis
- Genomic Data Science and Clustering
- Technical Market Analysis (Varsity Zerodha)
- Trading Basics (ISB)

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.

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.

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**.

Product Design | General Championship | IIT Kharagpur

- Ideated a Sound based Fire Extinguishing Drone inspired by research conducted by DARPA.
- 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

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.
- Participated in Socio-cultural event ‘**Nukkad Natak**’ organized under **Open IIT competition, IIT Kharagpur**.