



# Abhinav Japesh


Indian Institute of Technology (IIT), Kharagpur

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## Education

**Dual Degree (B.Tech+M.Tech), Indian Institute of Technology(IIT), Kharagpur**

**GPA-8.73/10 | 2018-2023**

Major: Electrical Engineering with splz. in Instrumentation and Signal Processing

B.Tech CGPA-8.98/10

Minor: Computer Science and engineering

M.Tech CGPA-8.73/10

Micro: Artificial Intelligence

Minor CGPA-8.9/10

Micro CGPA-9.63/10

- **Department Rank 3 with recipient of Late. Prof V.G. Rau scholarship award in EE department.**

- **Recipient of Institute Order of Merit for contribution in Tech.,Gymkhana,IIT-Kharagpur**

## Research Interests

Information Retrieval, Natural Language Processing, Complex Networks, Economics, BioInformatics, Artificial Intelligence

## Work Experience

**Sprinklr, Inc.**

**Gurgaon, India**

Software Developer Engineer

July 2023 - Present

- Successfully developed various features in **Sprinklr Service CCaaS** (formerly Sprinklr Care) and **Sprinklr Marketing**, demonstrating in-depth framework knowledge, ownership, and expertise in critical implementation and debugging.
- Within a short time frame, became the sole maintainer for 2 major features across 2 different modules, **external API Utilization** (Sprinklr Service), **Automated Approval Workflows** (Sprinklr Marketing) and skillfully developing and integrating **custom spreadsheet and calender functionalities** into the Project Management module.
- Led the design and implementation of a key product alignment feature in **work-management-app**(Sprinklr Marketing, enhancing cross-product consistency; successfully executed single-handedly and impacting **40% of Sprinklr customers**.

**Sprinklr, Inc.**

**Gurgaon, India**

Software Developer Engineering Intern

May 2021 - July 2021

- Developed a web application enabling front-end developers to **auto-generate content loader code via drag-and-draw**, incorporating live editing, two-way code and canvas editing, and advanced layout and animation tools for enhanced usability.
- Tested core features using **Jest**, with it's integration into the company's developer portal and **Spaceweb library**(open source)

**Complex Networks Research Group**

**Kharagpur, India**

Undergraduate Researcher under **Prof. Pawan Goyal, CSE, IIT Kharagpur**

March 2021 - Dec 2021

- Collaborated with Goldman Sachs on an NLP-driven Relation Extraction project for financial documents
- Annotated complex relations and entities to form structured triplets from **10-K and 10-Q financial documents**, aligning with the **FIBEN ontology** to ensure industry-standard accuracy and consistency.
- Constructed an annotated dataset, transforming unstructured financial text into structured triplets and leveraged this dataset to train relation-extraction models for the automated processing of **50 annual and quarterly reports of 20 U.S. companies**

*Research Areas: Knowledge Graphs, Machine Learning, Information Retrieval, Financial Data Analysis*

**Neuramart**

**Gurgaon, India**

Tech. Lead

August 2023 - Present

- Introduced a novel approach to enhance **AI-driven debugging systems** (e.g.ChatGPT, Copilot) by **dynamically re-sampling actions** based on prior results, improving decision-making , hallucination avoidance, and efficiency in **software issue resolution by 26%**.
- Architected and implemented a **centralized AI tool platform** to integrate **multiple AI tools** via module federation, leveraging **GraphQL** for efficient data querying and **Apollo Client/Server** for robust backend orchestration and state management.

*\*under development stage*

## Competitions

**Super Resolution of Lunar Images | GOLD**

problem statement by **Indian Space Research Organisation(ISRO)** — Inter IIT Tech. Meet'2023

Nov'22 - Jan'23

- Innovated a novel approach to achieve state of the art method for **super resolution (256X) of lunar images** from combining terrain mapped images and high resolution limited dataset from **TMC-2 and OHRC** payloads of **Chandrayan-2**
- Engineered a sophisticated **physics-informed GAN model** having **three discriminators trained on terrain data** for feature enhancement, combined with an image stitching algorithm for **lunar map construction(57% coverage)** and a website to host it.

**Multi Agent Drone Delivery System | BRONZE**

problem statement by **BlueYonder** — Inter IIT Tech Meet '2022

Nov 2021 - Jan 2022

- Devised an algorithm for **multi-drone delivery system** with charging stations and warehouses, achieving **96% demand fulfillment**.
- Applied **NSGA-II, A\***, Graph algorithms for optimal assignments, factoring in distance, energy-capacity, and other real constraints.

## Research Experiences

### Subspace Based Method For Anomaly Detection using VAE

Prof. Jihong Park Aug'22 - Apr'23

- Introduced an innovative **HFR-subspace projection** to improve anomaly detection accuracy by up to **13.4%** in AUROC
- Implemented **HFR-AE** framework compatible with diverse Autoencoder models, boosting performance without altering architectures
- Designed and validated a subspace thresholding mechanism that distinguishes between normal and anomalous samples based on reconstruction errors, optimizing performance through hyperparameter tuning without iterative re-training.

*Research Areas: VAEs, Error Detection, Dimension Reduction, Information Extraction* \*\* Submitted paper in IEEE-SSP journal

### Domain Pre-training for Hijacked Review Detection in Online Forums

Prof. Animesh M. Feb'22 - Apr'22

- Generated a synthetic dataset of malicious and hijacked product reviews based on the Amazon Review Dataset.
- Evaluated benchmark language models including Twin-LSTM, BERT, and RoBERTa across multiple performance metrics.
- Developed the Amazon E-Manual Dataset for model pre-training, achieving 95% accuracy and exceeding benchmarks by over 3%.

*Research Areas: Information Retrieval, Knowledge Graphs, Natural Language Processing*

### Automated identification of sleep stages from EEG signals

Prof. A. Subasi Feb'21-Apr'21

- Automated diagnosis, processing and categorizing of 5 different Sleep-stages based on continuous data from 11 EEG and EMG sensors.
- Applied feature extraction techniques (DWT/WPD) with a sliding window approach on EEG data to convert it into a trainable format.
- Experimented with de-Convolution models integrated with wavelet feature extraction methods, boosting sleep stage diagnosis by 8%.

*\*\*submitted paper in Bio medical signal processing and control.*

### Predict Media bias from user sentiment on twitter

Prof. Animesh M. Jan'23-Apr'23

- Aimed to predict political inclination of news channels using retweets and corresponding metadata as a proxy measure for political bias
- Collected retweeters' data of extreme media channels, encoded them using Sentence-BERT and labelled them as liberal or conservative
- Implemented a Neural Network model for 73.2% accuracy, analysed tweets data for different news channels and predicted bias using it

*Research Areas: Information Retrieval, Knowledge Graphs, Natural Language Processing, Social Network*

### Computational Protein Stability Analysis via Molecular Dynamics Simulations

Prof. Pralay M. Jan'23-Apr'23

- Analyzed and compared hydrophobic, hydrogen bonding, and electrostatic interactions for stability and compactness of 20 proteins.
- Analyzed lysozyme structure using RMSD, RMSF, and radius of gyration to assess folding dynamics and residue flexibility.

*Research Areas: Computational Biology, Algorithms, Networks*

### Deep Learning based Covid-19 trend predictor

Prof. Adway. Mitra Aug'19-March'20

- Explored sequence models and non-sequence models like XGBoost and observed trend of Covid 19 as a multivariate time series.
- Engineered arch like stacked LSTM, Transformers, Multi-Head Attention LSTM to predict possible number of cases.
- Implemented LSTNet, a convoluted layer based model, to extract short and long-term patterns for increasing prediction accuracy

*Research Areas: Machine Learning, Time Series, Transformers*

## Relevant Coursework

**CSE.:** Algorithms and Data Structures, Information Retrieval, Computer Architecture, Operating Systems, NLP, Social Network

**AI:** Machine Learning, Deep Learning, AI and Economics, Linear Algebra for ML, Big Data, AI and Ethics

**Others:** Embedded Systems, Control Systems, Probability & Statistics, Statistical Signal Processing, Transform Calculus

## Technical Skills

- **Languages:** C++, C, Python, Javascript, Bash, Java, SQL, HTML, CSS, LaTeX, Flex, Verilog HDL, MIPS, Rust
- **Tools:** Next, React, Svelt, SveltKit, Apollo-GraphQL, Express, Git, Node, Typescript, Docker, Tensorflow, Huggingface
- **Libraries:** Redux, CanvasJS, SlateJS, Django, NLTK, SlateJS, Numpy,

## Awards and Achievements

- 2023: Awarded **Institute Honour of Merit (Distinction in Tech)** for impactful contributions to the welfare of the student community.
- 2023: Captained the **IIT Kharagpur team** to a **Gold medal** at **Inter IIT Tech Meet 2023**, excelling in an **ISRO challenge**.
- 2018: Among **top 0.1%** and **top 0.01%** in JEE-Advanced-2018 and JEE-Mains-2018 respectively, out of 1.3 Million candidates
- 2018: Among **Top 0.02%** in Kishore Vaigyanik Protsahan Yojana Scholar(**KVPY**) (SX) by Indian Institute of Science(**IISc**), Bangalore
- 2017: Cleared **Indian National Astronomy Olympiad(INAO-2nd level of International Astronomy Olympiad)** by HBCSE-2017)

## Positions of Responsibilities

### Teaching Assistant, Signals and Network Theory, IIT Kharagpur

Aug 2020 – April 2023

- Led a batch of 110 students, providing support in doubt-solving and theory on transform calculus and network theory applications.

### Web Team Member, International Relations Cell, IIT Kharagpur

Mar 2019 – April 2020

- Maintained the official website of **International Relations, IIT Kharagpur** and guided the junior web team members about the work.

### Student Wellness Group Mentor, Student welfare group

Aug 2020 – April 2023

- Mentored 5 Undergraduate students, allocated by Student Welfare Group (SWG) for academic and non-academic activities in campus

## Extra Curriculars

- **Volunteer at National Service Scheme (NSS), IIT Kharagpur:** Taught primary school students in Salboni village
- **Bronze medal in Squash**, General Championship'2020, a campus-wide competition held between different halls.
- **Gold medal in Badminton**, General Championship'2019, a campus-wide competition held between different halls.