

# Aviral Jain

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Artificial Intelligence and Machine Learning (M.Tech) + Agricultural and Food Engineering (B.Tech)  
Micro-Specialisation in Entrepreneurship & Innovation

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## EDUCATION

Year	Degree/Exam	Institute/School	CGPA/Marks
2023	B.Tech+M.Tech Dual Degree	Indian Institute of Technology, Kharagpur	8.90/10
2018	All India Senior School Certificate Examination	Sir Padampat Singhanian School, Kota	90.0%
2016	All India Secondary School Examination	Sir Padampat Singhanian School, Kota	10/10

## INTERSHIPS

### Software Development Intern | Track and Trace, Honeywell

May '22 - Jun '22

- Worked in an agile production environment with **100+** UX design iterations for a building a redesigned Track & Trace for Manufacturers portal
- Integrated a Dashboard and Serialization Engine with the Track & Trace for Manufacturers portal using **React.JS** for frontend development
- Embedded a dynamic world map to the Dashboard using **GoogleMaps API**, showing real time inventory data relevant to manufacturer
- Built **docker container** clusters on AWS, utilized Kubernetes and Docker for the runtime environment of the CI/CD deployment pipeline

### Flight Search Caching | Data Science Research Intern | ixigo

Feb '22 - Apr '22

- Researched methods like **MCMC**, **Survival Analysis** to generate predictions for pre-emptive caching of flight search and price change data
- Processed search data in accordance with survival data, **engineered features** with journey sector, time of search for multivariate modeling
- Trained and benchmarked **linear** (Kaplan Meier's, Cox Proportional Hazard) and **ensemble models** (Random Survival Forest, Survival SVM)
- Calculated the **average posterior death probability** using training set, which is then used over test dataset to predict time till price change

### Address Standardization | Data Science Intern | OneCard, FPL Technologies

Feb '22 - Mar '22

- Implemented an in-house **address standardization API**, which parses rough addresses and restructures them into a standardized format
- Extracted primary components of addresses using **rule-based string matching**, exposed the feature as HTTP endpoint using **REST APIs**
- Minimized the probability of fraud and saved mailing expenses by **~15%**, by correcting **1,00,000+** addresses for credit card shippings

## PROJECTS

### Explainable Weather forecast using Deep Spatial Autoencoders | Masters Thesis Project ([link](#))

Jul '22 - Present

- Implemented a Data Driven Weather Prediction model, used a Data Assimilation algorithm (**DDWP + DA framework**) to ingest noisy data
- Implemented a **multi-time step method** and built a spatial transformer-based **U-NET** to capture features of spatio-temporal weather data

### Multi Agent Pathfinding Problem and its applications in Agriculture | Course Project ([link](#))

Sep '21 - Nov '21

- Modeled the **multi agent path finding problem** for managing aerial and ground (obstacle-constrained) swarms for precision agriculture
- Implemented a bi-level **Conflict Based Search** algorithm which performs constraint search on each agent as well as the whole conflict tree

### Breast Histopathology Image Segmentation using Adversarial Methods | Machine Vision Lab, IIT Roorkee ([link](#))

Dec '20 - Feb '21

- Built several classification models for benign and malignant Breast Ultrasound images using SOTA architectures like **VGG\_16**, **ResNet50**
- Devised pre-processing methods like **binary thresholding**, and a custom **U-NET** like segmentation model with residual blocks and jump links
- Achieved excellent performance over several metrics like Dice (**88%**), Jaccard Index (**93%**), Specificity (**93.8%**) and Hausdorff dist. (**5.57**)

## COMPETITIONS

### Run with the Giants | SP Jain Institute of Management | National Finalist

Jun '21 - Jul '21

- Studied digital payment company Stripe's business model and analyzed its market position using frameworks like **Porter's Five Forces**, **STP**
- Analyzed the problems faced by Stripe during the Covid-19 pandemic, recommended strategic initiatives and a plan of action for the same

### Drishtee's Tech Led Innovation for Rural Entrepreneurs | 9th Inter IIT Tech Meet | Gold Medal

Mar '21 - Apr '21

- Performed primary research among 100+ survey candidates; validated the product-market fit; led the design team for the IIT KGP contingent

### Hult Prize Challenge, IIT Kharagpur | Campus Finalists

Nov '20 - Dec '20

- Proposed a systematic storage and sale platform to minimize wastage in the domestic food supply chain and improve food security

## SKILLS

**Languages:** C, C++, Python      **Libraries/Packages:** numpy, pandas, PyTorch, Tensorflow, Keras, sklearn, OpenCV, NLTK, React

**Skills:** Web Development, Git Version Control, Linux Shell, SQL, Data Structures and Algorithms, Excel, Photoshop and Graphic Design, Figma

**Coursework:** Machine Learning | Deep Learning | Artificial Intelligence | Linear Algebra | Probability & Statistics | Entrepreneurship Essentials

## EXTRA CURRICULAR ACTIVITIES

- **Head of Photography** at Technology Filmmaking and Photography Society (2020-21), involved in Fresher's selections and skill workshops
- Cinematographer and Editor for the **Gold** winning Team in the Online Short Filmmaking event at Inter-IIT Cultural Meet 5.0 (Bombay, 2019)
- Part of **Silver** winning (2018-19) and **Gold** winning (2019-20) team of Patel Hall of Residence in the Ad-Design General Championship Event