



AGRICULTURAL & FOOD ENGINEERING/ARTIFICIAL INTELLIGENCE MACHINE LEARNING AND APPLICATIONS

MICRO SPL. in ENTREPRENEURSHIP AND INNOVATION

EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2023	M.TECH Dual Degree 5Y	IIT Kharagpur	8.90 / 10
2018	All India Senior School Certificate Examination	Sir Padampat Singhania School, Kota	90%
2016	All India Secondary School Examination	Sir Padampat Singhania School, Kota	10 / 10

INTERNSHIPS

- Software Development Intern | Track and Trace, Honeywell** May '22 - Jun '22
• Worked in an **agile** production environment with **100+** UX design iterations for a redesigned Track & Trace for Manufacturers portal
• Integrated a Dashboard and Serialization Engine with the Track & Trace for Manufacturers portal using **React** 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 set 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
- Growth Intern | Pristyn Care** May '21 - Jun '21
• Conducted **primary research** on corporate healthcare firms among **50+** survey participants and created pitch-decks for corporate tie-ups
• Evaluated the potential **points of acquisition**; contributed **17%** of quarterly acquisition target by partnering with MakeMyTrip & Myntra

PROJECTS

- Explainable Weather forecast using Deep Spatial Autoencoders | Masters Thesis Project** Jul '22 - Present
Prof. Adway Mitra, COEI, IIT Kharagpur | <https://github.com/jainaviral898/weather-forecasting-with-autoencoders>
• Implemented a Data Driven Weather Prediction model, used a Data Assimilation algorithm (**DDWP + DA framework**) to ingest noisy data
• Built a spatial transformer-based **U-NET** to capture features of spatiotemporal weather data, implemented a multi-timestep method
- Multi Agent Pathfinding Problem and its applications in Agriculture | Course Project** Sep '21 - Nov '21
Prof. Partha Pratim Chakraborty, COEI, IIT Kharagpur | <https://github.com/jainaviral898/mapp-cbs-aifa>
• 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 and the whole conflict tree
- Breast Histopathology Image Segmentation| Machine Vision Lab, IIT Roorkee** Dec '20 - Feb '21
Dr. Balasubramanian Raman, Machine Vision Lab, IIT Roorkee | <https://github.com/jainaviral898/Cell-Nuclei-Segmentation-using-cGAN>
• 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 ResNet blocks, jump links
• Achieved excellent accuracy over several metrics like Dice (**88%**), Jaccard Index (**93%**), Specificity (**93.8%**) and Hausdorff dist. (**5.57**)

COMPETITION/CONFERENCE

- Run with the Giants | SP Jain Institute of Management | National Finalist** Jun '21
• Studied digital payment company Stripe's business model and analysed its market position using **Porter's Five Forces** Framework
• Analysed the problems faced by Stripe during 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** Apr '21
• Performed primary research among 100+ survey participants, validated the product-market fit, led the design team for the 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 AND EXPERTISE

Programming Languages: C,C++, Python **Libraries/Packages:** numpy, pandas, PyTorch, Tensorflow, Keras, sklearn, OpenCV, NLTK, React
Skills: Web Development, Git, Linux Shell, SQL, Data Structures and Algorithms, Excel, Photoshop and Graphic Design, Figma
Coursework: Machine Learning | Deep Learning | Artificial Intelligence | Linear Algebra | Probability & Statistics | Engineering Maths

POSITIONS OF RESPONSIBILITY

- Head of Photography | Technology Filmmaking and Photography Society** Aug '20 - Jul '21
• Involved in the Freshers' Induction, Selections and Workshops related to filmmaking and photography during the academic year 2020-21
• Oversaw the production of **7 short films** during the remotely conducted Fresher's Production, managed the society with **120+** members
• Worked on initiatives like **interactive workshops, a photography magazine and online photography contests** during the pandemic

EXTRA CURRICULAR ACTIVITIES

- Cinematographer and Editor for the **Gold** winning Team in the Online Short Filmmaking event at Inter-IIT Cultural Meet (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