



## EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2023	B.TECH	IIT Kharagpur	9.10 / 10
2019	CBSE (XII)	Delhi Public School, Indirapuram	94.80%
2017	CBSE (X)	Delhi Public School, Indirapuram	10.00 / 10

## PUBLICATIONS

Server-Side Local Gradient Averaging and Learning Rate Acceleration for Scalable Split Learning | Prof. Jihong Park, Deakin University

Conference: **International Workshop on Trustable, Verifiable & Auditable Federated Learning in Conjunction with AAAI, 2022**

- Proposed a variation of **Split-Fed Learning** for boosting performance on image classification task with the FMNIST, and CIFAR-10 datasets
- Enhanced privacy, communication efficiency, and tackled client-server imbalanced training problem along with scalability of performance
- Analyzed effect of parameters like learning rate, contribution of different losses & procured **87.5% accuracy** on architecture of 20 clients

Deep Learning based architectures for Semantic Segmentation of Aerial Imagery | Dr. Bharath H. Aithal, IIT Kharagpur

Conference: **International Conference on Unmanned aerial systems in Geomatics, 2021**

- Built CNN-based, **modified UNet** model, and trained using transfer learning on Geo-spatial domains of Austin, Chicago, Kitsap, and Vienna
- Benchmarked & analyzed outcomes generated by other baseline models: ResNet, VGGNet, SegNet & UNet on a similar scale of parameters
- Obtained **Accuracy: 98%, F1-score: 93%** by incorporating morphological techniques like Erosion & Dilation for an improved performance

## PROJECTS

Molecule Generation using Contrastive Variational Autoencoders | University of Liverpool Apr '22 - Jul '22

- Surveyed literature on existing techniques of molecular generation using Transformers, VAE, MassGenie, Contrastive learning & MOSES
- Analyzed the effects of change in learning rate, batch size, scalability, and embedding lengths of **SMILES** representation in **ZINC** dataset
- Obtained **accuracy** of **93%** along with studying the experimented effect of **Contrastive Learning** on VAE models for robust performance

Eye Movement type Categorization | IIT Kharagpur Jan '21 - Mar '21

- Gathered information on **EEG Signals**, various eye movement types, Sequential Data handling, categorization, and evaluation techniques
- Self-curated labeled data from **10k+** raw time series eye dataset using preprocessing & thresholding strategy to classify 16 fixation points
- Achieved an **F1-score: 99.5%** using Sliding Window metrics & **89.4%** using Rolling Forecast metrics on the proposed **BiLSTM-LSTM** model

## INTERNSHIPS

Data Science Research Intern | Mphasis Limited May '22 - Aug '22

- Achieved **89% accuracy** in generating label for supervised learning using **Weak Supervision**, corrected label errors & created clean labels
- Benchmarked & assessed **4** HuggingFace variations of **DALL-E** model for **Text2Image** generation, to create images within **5-30** seconds
- Built & deployed **AutoML** module for **NLP** text classification: data profiling, preprocessing, vectorization, model flow, on AWS Marketplace
- Replicated, inferred, and explored the generation of **Text2Motion**, from an open-sourced pre-trained model using varied user-defined text

Machine Learning Engineer | Chi SquareX Jan '21 - Mar '21

- Improved **accuracy** by **33%**, in a project for conducting head gesture classification using video signals on the primary degrees of freedom
- Devised a heuristic solution for weekly aircraft scheduling while minimizing the maintenance cost using the **DFS** algorithm for **25** aircraft
- Showcased **10%** improved results created from **SimpleNet** with data augmentation methods using **CycleGAN** for **Neural Style Transfer**
- Visualized, preprocessed & implemented **Transfer Learning** on YOLO model for **Object Detection** of washer, thread, head & nut dataset

AI Intern | Jalla Labs Private Limited Dec '20 - Feb '21

- Developed an end-to-end NLP-based model for Intelligent Recruitment System to get sorted relevant list of applicants from **140+** resumes
- Extracted information from frequent file formats: doc, pdf, using **Non-OCR** methods & customized **Name Entity Recognitions** for usage
- Saved **30%** time over manual selection of candidates by building query-based sorting of resumes for **10** roles concerning **200** key skillset

## POSITIONS OF RESPONSIBILITY

General Secretary | International Relations Cell, IIT Kharagpur May '21 - Jun '22

- Led a 3-tier team of **50+** students to harness the Institute's international relations along with **Dean Outreach, Assoc. Dean IR, and OIR**
- Garnered **151 (47% YoYinc)** Foreign Training offers from top universities like TUM, Imperial College London, with **9.8+ Million INR** funding
- Organized panel discussion in hybrid-mode, with the Committee members of New Curriculum which saw a participation of **750+** students
- Coordinated with **ETS** to organize webinars on **GRE & TOEFL** preparations, and avail special discount vouchers for the IITKGP students
- Conducted HULT Prize OnCampus round, garnering a reach of **1000+** students & organized Bootstrap, inviting **6** Forbes 30 under 30 leaders

## AWARDS AND ACHIEVEMENTS

- Scored a **99.92 percentile** in Joint Entrance Examination Mains 2019 and secured an **AIR 1261** amongst the 11.47 Lakh applicants
- Secured an All India Rank of **3214** in Joint Entrance Examination Advanced 2019, among the 2.45 Lakh shortlisted candidates across India

## SKILLS AND EXPERTISE

- **Languages:** Python | SQL | C++ | C | R | HTML | CSS | MATLAB | Excel
- **Skills:** Deep Learning | Data Science | Computer Vision | Natural Language Processing | Machine Learning
- **Libraries:** Pandas | Numpy | Sklearn | Matplotlib | Seaborn | Keras | TensorFlow | PyTorch | SpaCy | NLTK | Regex | BeautifulSoup | Docker

## COURSEWORK INFORMATION

Programming & Data Structures | Algorithms - I | Probability & Statistics | Machine Learning Foundation & Applications | Image Processing | Deep Learning Foundation and Applications | Natural Language Processing | Artificial Intelligence Foundation and Applications