

# Mansi Uniyal

3rd Year Undergraduate  
Department of Electrical Engineering  
IIT Kharagpur

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## Academic Qualifications

Year	Degree/Certificate	Institute	CPI
2019 - Present	B.Tech	Indian Institute of Technology, Kharagpur	9.26/10
2019	CBSE (XII)	Delhi Public School, Indirapuram, UP	95/100
2017	CBSE (X)	Delhi Public School, Indirapuram, UP	10/10

## Publications

**2nd International Conference on UNMANNED AERIAL SYSTEMS in GEOMATICS-2021, India** (April 2021)  
• Presented and Co-authored a research paper, *Deep learning based architectures for semantic segmentation of aerial imagery*  
• Emphasised on Convolutional Neural Network application on building segmentation from Geo-Spatial images from various parts of India

## Key Projects

**Local Parallel Training** (April 2021 - Present)  
Professor: Prof. Jihong Park, Lecturer, Information Technology at School of Info Technology, Deakin University

- Enhanced the performance of image classification on **FMNIST** and **CIFAR-10** data set with incorporating **contrastive learning**
- Implemented a **multi-worker** and **multi-chunk** architecture, with chunks of ResNet-16, infusing **local training** of each chunk per worker
- Studied effect of various parameters such as learning rate, contribution of various losses, impact of increasing workers on training
- Experimented on different contrastive loss functions, varied sequences of supervised and contrastive training

**Eye movement type categorization** (Oct 2020 - Jan 2021)  
Professor: Prof. Jhareswar Maiti, Professor at Department of Industrial and Systems Engineering, IIT Kharagpur

- Literary surveyed on **EEG signals**, **GWO algorithm**, Eye movement types
- Worked on sequential time series data of the eye, predicting the categories of fixation points
- Successfully implemented and proposed **Deep BLSTM-LSTM** model architecture

**GAN algorithms in generation of Super-Resolution from High-Resolution satellite images** (Oct 2020 - Dec 2020)  
Professor: Dr. Bharath H.Aithal, Ass. Professor at Ranbir & Chitra Gupta School of Infrastructure Design and Management

- Implemented **SRCNN**, and **Bicubic Interpolation** as baseline models for the task of image super-resolution
- Replicated **EEGAN**(Edge Enhancement Generative Adversarial Network) with implementation on **HPC** (High-Performance Computing)

**Remote sensing image segmentation for building footprints for satellite images** (Sept 2020 - Dec 2020)  
Professor: Dr. Bharath H.Aithal, Ass. Professor at Ranbir & Chitra Gupta School of Infrastructure Design and Management

- Built a CNN based, **Modified UNet** model with transfer learning on wide range of Geo-spatial domains
- The proposed model outperformed other baseline models: **ResNet**, **VGGNet**, **SegNet**, **UNet**
- Worked on various **Morphological** methods like Erosion and Dilation on the output

## Internships

**Machine Learning Engineer at Chi SquareX** (Jan 2021 - Present)

- Neural Style Transfer:** Demonstrated enhancement of results on SimpleNet by data augmentation techniques using CycleGAN
- Aircraft optimization:** Developed heuristic solution approach for a weekly schedule with minimized maintenance cost
- Head Gesture Recognition:** Worked on classification for head gestures using video signals based on different degrees of freedom

**AI intern at Jalla Labs Private Limited** (Dec 2020 - Feb 2021)

- Deployed an Intelligent Recruitment System using **NLP** (Natural Language Processing) to extract best fit applicants from their resumes
- Extracted information from various file formats (like doc, pdf) of resumes using **Non-OCR** Techniques followed by data structuring
- Customised **NER** (Name Entity Recognition) for organizations & names, and built a query based sorting of resumes based on skill set

## Skills and Expertise

- Programming Languages:** C, C++, Python
- Software and Libraries:** Keras, TensorFlow, PyTorch, SpaCy, NLTK, Sklearn

## Relevant Courses

Computer Vision, Winter School of AI & Robotics Machine Learning, Stanford University, Coursera Programming & Data Structure, IIT Kharagpur	Statistics with Python, University of Michigan, Coursera Deep learning Specialization, Stanford University, Coursera Algorithms-I, IIT Kharagpur
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## Scholastic Achievements

- Secured an **All India Rank of 3214** in **JEE Advanced, 2019** among 2.45 Lakh shortlisted candidates from all over the country
- Secured an **All India Rank of 1261** in **JEE Mains, 2019** among 11.47 Lakh candidates with a **99.92** percentile
- Secured a **zonal rank of 4**, and **international rank of 67** at **NSO** (National Science Olympiad), in the academic year 2018-19
- Cleared **Pre-RMO** and **RMO** (Regional Mathematical Olympiad) (DELHI region), in the academic year 2017-18 and 2019-20
- Cleared **INMO** (Indian National Mathematical Olympiad), in the academic session of 2017-18

## Positions of Responsibility

**General Secretary at International Relations Cell, IIT Kharagpur** (May 2021 - Present)

- Nominated from 20 Student Members by the Dean, Outreach to lead internationalisation initiatives of IIT Kharagpur
- Assisting the Office of International Relations in organizing foreign internships and hosting international students and delegations
- Mentoring a team of 40 Junior Associates in doing case studies along with proposing new ideas and initiatives

**Student Member at International Relations Cell, IIT Kharagpur** (Sept 2020 - May 2021)

- Entrusted with the responsibility of increasing the global outreach of IITKGP in coordination with OIR as a part of a 20 member team
- Garnered 103 Foreign Training Offers from leading universities like Stanford, Carnegie Mellon, Brown, Yale and many more
- Organized the first online Hult Prize OnCampus round which saw participation of 40 teams (33% YoY increase) from UG and PG students