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

Supervised Learning: Unicasting vs Averaged Broadcasting (*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 by incorporating **federated 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, sequences of supervised and contrastive training, split training and federated learning

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
- **Head Gesture Recognition:** Worked on classification for head gestures using video signals based on different degrees of freedom
- **Art generator with GANs:** Designed Adversarial models using various DC-GAN, WGAN and CGANs for art generation
- **3D Medical Image Segmentation:** Lung Cancer Detection using 3D Convolutional model architecture

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	Statistics with Python, University of Michigan, Coursera
Machine Learning, Standford University, Coursera	Deep learning Specialization, Standford University, Coursera
Programming & Data Structure, IIT Kharagpur	Algorithms-I, IIT Kharagpur

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
- Qualified and appeared for **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