

# Chahat Raj

ARTIFICIAL INTELLIGENCE RESEARCH STUDENT

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*“Reading maketh a full man, conference a ready man and writing an exact man.”*

## Research Interests

Deep Learning, Social Network Analysis, Multimodal Content Analysis, Computer Vision, Statistical Inference

## Education

### DELHI TECHNOLOGICAL UNIVERSITY, INDIA

MASTER OF TECHNOLOGY IN INFORMATION SYSTEMS, DEPARTMENT OF INFORMATION TECHNOLOGY

CGPA: 9.08/10

Aug. 2019 - May 2021

### INDIRA GANDHI DELHI TECHNICAL UNIVERSITY FOR WOMEN, INDIA

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE AND ENGINEERING

CGPA: 6.42/10

Aug. 2015 - May 2019

### MOUNT OLIVET SCHOOL, DELHI, INDIA

SENIOR SECONDARY & SECONDARY, CBSE

CGPA: 9.2/10, 9.4/10

March 2015

## Publications

Raj, Chahat and Meel, Priyanka (2021), **ConvNet Frameworks for Multimodal Fake News Detection** [Published]

Applied  
Intelligence

Raj, Chahat and Mehta, Mihir (2020), **MediaEval 2020: An Ensemble-based Multimodal Approach for Coronavirus and 5G Conspiracy Tweet Detection** [Published]

CEUR WS

Raj, Chahat and Meel, Priyanka (2020), **Fake News on Multiple Online Social Networks** [Presented]

ICPCCAI

Raj, Chahat and Chattopadhyay, Manojit (2021), **Bitcoin Price Prediction using LSTM Autoencoder regularized by False Nearest Neighbor Loss** [Under Review]

Economics Letters

Raj, Chahat and Meel, Priyanka (2021), **Microblogs Deception Detection using BERT and Multiscale CNN** [Under Review]

ICCID

Raj, Chahat and Meel, Priyanka (2021), **Text-Image Pooling Network for Multimodal Fake News Detection** [Under Review]

Neural Networks

Raj, Chahat and Meel, Priyanka (2021), **Fake News Characterization and Factor Identification: A Statistical Approach** [Under Review]

Information  
Systems Frontiers

Raj, Chahat and Meel, Priyanka (2021), **A Review of Web Infodemic Analysis and Detection Trends across Multi-modalities using Deep Neural Networks** [Under Review]

Progress in  
Artificial  
Intelligence

## Experience

### INDIAN INSTITUTE OF MANAGEMENT RAIPUR

RESEARCH & PUBLICATIONS (SUPERVISOR: DR. MANOJIT CHATTOPADHYAY)

Chhatisgarh, India

May 2021 - Present

- Researching AI methods for Cryptocurrencies' Price Prediction.
- Developed an **LSTM Autoencoder** with **False Nearest Neighbor Regularizer** for time-series forecasting.

### DELHI TECHNOLOGICAL UNIVERSITY

RESEARCH ADVISOR (SPOC) (SUPERVISOR: DR. PRIYANKA MEEL)

Delhi, India

Aug. 2020 - May 2021

- Mentoring four students to conduct research in topics: **Deepfakes, Face Recognition, AI in Medical Field, Covid-19 Data Analysis** in social, medical and other perspectives.
- Duties involve teaching data extraction, preprocessing, problem formulation and manuscript preparation.

### CENTRE FOR RAILWAY INFORMATION SYSTEMS (CRIS)

INFORMATION SECURITY INTERN (SUPERVISOR: MR. VIRESHWAR MULLICK)

Delhi, India

May 2018 - Aug. 2018

- Performed organizational defense using Cisco's SIEM. Tasks included **malicious activity detection, log analysis, vulnerability assessment** and **security patch generation**.
- Fixed loopholes in North-Indian Railways freight and passenger ticket-booking dashboards. Learned CCNA.

## RAJ TUTORIALS

Delhi, India

### TUTOR

Apr. 2015 - May 2021

- Engaged in tutoring high school students in their curriculum subjects for **6+ years**. Taught **over 150** students. Primary subjects include Computer Science, Physics, Mathematics and Chemistry.

## Projects

### UNSUPERVISED RUMOR DETECTION

Delhi, India

SUPERVISOR: DR. PRIYANKA MEEL

Ongoing

- Developing a novel machine learning architecture using clustering algorithms (**RBF Kernel, NN, K-Means, Fuzzy C Means** Clustering) to classify tweets in **PHEME** dataset into multiple categories.

### MULTIMODAL FAKE NEWS DETECTION USING TEXT-CNN AND ALEXNET

Delhi, India

SUPERVISOR: DR. PRIYANKA MEEL

Spring 2020

- Designed and implemented a novel architecture for detecting fake news using textual and visual features with **Text-CNN, AlexNet**, and **Attention-Mechanism**. The model's performance surpasses existing state-of-the-art-methods.

### IMAGE FORGERY DETECTION

Delhi, India

SUPERVISOR: MS. DEEPIKA VARSHNEY

Fall 2019

- Developed a deep learning model introducing a **novel R-CNN architecture** to detect manipulated regions in images. The approach proposes a faster R-CNN composing **RPN layer, ROI pooling layer, Bilinear pooling layer, RGB Roi and Noise Roi feature layers** and training it end-to-end.

### CRYPTORESUME

Delhi, India

SUPERVISOR: MR. INDRA THANAYA

Spring 2019

- Potential solution for **resume creation and automated validation**. A decentralized Blockchain Smart Contract-based service to **resist fraudulent access, manipulation, data leakage and supporting accreditation**. Credentials stored in the blockchain are digitally added by verified authorities.

### RECRUITQUERY

Delhi, India

SUPERVISOR: MR. INDRA THANAYA

Fall 2018

- A highly customizable and versatile application. Features **SQL-like syntax**. Provides **low-cost solution to GitHub recruiters** to filter tons of user profiles. Developed a **front-end layer** over GitHub API. Built using **Python, Re, regex, PyGithub, Pygments** and **Prompt toolkit**.

### VEHICLE TRACKER

Delhi, India

SUPERVISOR: DR. S.R.N. REDDY

Spring 2018

- A device using **Raspberry Pi, GPS, Accelerometer, Ultrasonic sensor** and **camera** to detect rule-breaking vehicles on road and issuing them an e-challan to their mobile number.

## Skills and Certifications

AI Skills	Applied Deep Learning, Applied Machine Learning, Information Retrieval, Data Visualization, Statistical Analysis and Hypotheses Testing
Other Skills	CEH, CHFI, CCNA, Cyber Security, Network Security, Mobile Forensics
Certifications	Neural Networks and Deep Learning [COURSERA], Deep Learning Fundamentals [IBM], Deep Learning with Tensorflow [IBM], Accelerated Deep Learning with GPUs [IBM], Data Visualization with Python [IBM], Data Visualization with R [IBM]

## Technologies

Languages	Python (Good); R, MATLAB, Simulink, C, C++, HTML (Familiar)
Environments	Google Colab, Jupyter Notebook, Spyder, Pycharm, Eclipse, Dev C++, RStudio
Libraries	TensorFlow, PyTorch, Keras, Scikitlearn, Matplotlib
Softwares	Minitab, SPSS, NVivo, Tableau
Operating Systems	Windows, Kali Linux, Ubuntu
Typography	Microsoft Office, LaTeX

## Key Courses

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Research Project, ISY 651	O (Outstanding)
Research Problem Formulation, ISY 5202	O (Outstanding)
Research Seminar, ISY 5201	O (Outstanding)
Artificial Intelligence, ISY 5301	O (Outstanding)
Machine Learning and Applications, ISY 5410	A+

## Achievements

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Batch Topper, scored <b>10.00 SGPA</b> in M.Tech. third semester at DTU	Delhi, India
Third Rank, MEDIAEVAL 2020 Coarse Classification Subtask	Delhi, India
Fifth Rank, Ethical Hacking Workshop, CYBER SECURITY CELL, IGDUTW, scored <b>75/79</b>	Delhi, India
First Rank, DELHI UNIVERSITY, National level entrance exam	Delhi, India

## Extracurricular Activity

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### Blog

[chaahatraj.wordpress.com](https://chaahatraj.wordpress.com)

AMATEUR WRITER, POET

2015-Present

- Authored over **50 long blogs**.
- Wrote over **200 narratives** including poetries in English, Hindi and Urdu.
- An active member of The Inked Square.