Chahat Raj

ARTIFICIAL INTELLIGENCE RESEARCHER

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"Reading maketh a full man, conference a ready man and writing an exact man."

Research Interests

SOCIAL COMPUTING   NEURAL NETWORKS · SOCIAL NETWORKS & MEDIA · MULTIMODALITY · EXPLAINABLE AI · AI FOR SOCIETY

Education

DELHI TECHNOLOGICAL UNIVERSITY, INDIA   *CGPA: 8.78/10*
MASTER OF TECHNOLOGY IN *INFORMATION SYSTEMS*   *Aug 2019 - Aug 2021*

INDIRA GANDHI DELHI TECHNICAL UNIVERSITY FOR WOMEN, INDIA   *CGPA: 6.42/10*
BACHELOR OF TECHNOLOGY IN *COMPUTER SCIENCE AND ENGINEERING*   *Aug. 2015 - May 2019*

MOUNT OLIVET SCHOOL, DELHI, INDIA   *87.8% (SS)*, *CGPA: 9.4/10 (S)*
SENIOR SECONDARY & SECONDARY, *CBSE*   *March 2015*

Publications

[1]   **Raj, Chahat**. "*Deep Neural Networks towards Multimodal Information Credibility Assessment.*" Master's Thesis (2021)

[2]   **Raj, Chahat** and Priyanka Meel. "*ARCNN Framework for Multimodal Infodemic Detection.*" Neural Networks (2021) [Published]

[3]   **Raj, Chahat** and Priyanka Meel. " *ConvNet Frameworks for Multimodal Fake News Detection.*" Applied Intelligence (2021): 1-17. [Published]

[4]   **Raj, Chahat** and Priyanka Meel. "*Microblogs Deception Detection using BERT and Multiscale CNNs.*" IEEE GCAT (2021) [Published]

[5]   **Raj, Chahat**, Ayush Agarwal, Gnana Bharathy, Bhuva Narayan and Mukesh Prasad. "*Cyberbullying Detection: Hybrid Models Based on Machine Learning and Natural Language Processing Techniques.*" Electronics (2021) [Published]

[6]   Kabade, Varad, Ritika Hooda, **Chahat Raj**, Zainab Awan, Allison Young, Miriam Welgampola and Mukesh Prasad. "*Machine Learning Techniques for Differential Diagnosis of Vertigo and Dizziness: A Review.*" Sensors (2021) [Published]

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

[8]   **Raj, Chahat** and Priyanka Meel. "*Fake News on Multiple Online Social Networks.*" ICPCCAI (2020): 1-8. [Published]

[9]   **Raj, Chahat** and Priyanka Meel. "*People Lie, Actions Don't! Modeling Infodemic Proliferation Predictors among Social Media Users.*" (2021) [Under Review | Arxiv]

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

[11] **Raj, Chahat** and Priyanka Meel. "*Is Dynamic Rumor Detection on Social Media Viable? An Unsupervised Perspective.*" (2021) [Under Review | Arxiv]

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

[13] Velivela, Vivek, **Chahat Raj**, Mahendra Samarawickrama and Mukesh Prasad. "*The Effectiveness of Social Media Engagement Strategy on Disaster Fundraising.*" (2021) [Under Review]

Experience

UNIVERSITY OF TECHNOLOGY SYDNEY   *Sydney, Australia*
VISITING SCHOLAR   *June 2021 - Present*
- Developing *novel deep architectures* for web information pollution (*cyberbullying, hate & offensive speech*) detection in *multimodalities*
- *Reviewed state-of-the-art* in vertigo classification and performed *150+ ML experiments* determining critical medical tests for clinical inferences
- Employing *Explainable AI* in understanding ML performance in *liver cancer identification* using real-world patient data collected from hospitals

AUSTRALIAN RED CROSS   *Australia*
REMOTE RESEARCHER   *July 2021 - Present*
- Performed *EDA & Sentiment Analysis* on Red-Cross Donation data for the Bushfire period and identified *Facebook users' donation behavior*
- Formulated *key hypotheses* to establish the *relationship among social media KPIs and Disaster Fundraising*, also identifying users' perception
- Analyzed Facebook users' *patterns in watching, sharing, recommending, commenting, reacting to videos* for disaster relief fundraising

INDIAN INSTITUTE OF MANAGEMENT RAIPUR   *Chhatisgarh, India*
REMOTE RESEARCHER   *May 2021 - Present*
- Employing *Neural Networks* for *Stock Market & Cryptocurrencies*' *Price Prediction* & identifying *financial behaviour of markets & society*
- Optimizing *taylor series approximation* and *copula* for real-time *multivariate time-series predictions* of bitcoin returns
- Developed a novel *LSTM Autoencoder* with *False Nearest Neighbor Regularizer*, identifying two social deterministic factors for bitcoin prices

CENTRE FOR RAILWAY INFORMATION SYSTEMS (CRIS) *Delhi, India*
INFORMATION SECURITY INTERN *May 2018 - Aug. 2018*
- Performed organizational defense *malicious activity detection*, *log analysis*, *vulnerability assessment* & *patch generation* by Cisco's SIEM
- *Fixed loopholes* in North-Indian Railways freight and passenger *ticket-booking dashboards*. Learned *CCNA*

INDIRA GANDHI DELHI TECHNICAL UNIVERSITY FOR WOMEN *Delhi, India*
RESEARCH INTERN *Aug 2017 - Dec 2017*
- Identified *zero-day vulnerabilities* on *Facebook, Instagram, & Telegram* that let malicious users hack into social accounts of people
- Developed a *phishing website* and implemented its *retraction mechanism* from scratch to *ensure online security* on social networking sites
- Responsible for managing *workstations' boot up* with Ubuntu, Kali Linux, & Windows and *network configuration* in Computer Networks lab

Teaching

ADVISOR	to D. Kharat, B Vinod, M. Ibrahim, P. Sisodia, R. Bansal, H. Jangid, R. Hooda	*2020 - 2021*
TEACHING ASSISTANT	Delhi Technological University, Graduate level, ISY5301 *Artificial Intelligence*	*2019 - 2021*
PROFESSIONAL TUTOR	Raj Tutorials, *tutored 150+* high school students in their curriculum for *6+ years*	*2015 - 2021*

Professional Services

REVIEWER	*Common Ground Research Networks*, The Journal of *Communication and Media Studies*, *Arts in Society*,	*2021*
	ASTES Journal, International Journal of *Intelligent Computing and Cybernetics*, Emerald Publishing	*2021*
HEAD	*Cyber Cell*, IGDTUW	*2017-2019*

Talks and Presentations

TALK	*Cyberbully Monitoring:* ML4AU Research Showcase Event, Sydney, Australia **[URL]**	*2021*
TALK	*Cyber Security and Online Safety:* Motilal Nehru College, Delhi University, Delhi, India	*2018*
PRESENTATION	*Microblogs Deception Detection using BERT and Multiscale CNNs:* GCAT, Bangalore, India	*2021*
PRESENTATION	*Fake News: Coronavirus and 5G Conspiracy Task:* MediaEval **[URL]**	*2020*
PRESENTATION	*Fake News on Multiple Online Social Networks:*, ICPCCAI, Jaipur, India	*2020*

Selected Projects

TRUEPIXEL	*Novel R-CNN* to *detect image forgery* using RPN, ROI pooling, Bilinear pooling, RGB & Noise Roi layers	*CODE*
SIMONSAYS	A *Novel LSTM-CNN* with *98%* accuracy for *speaker identification* on *self-curated dataset* of *1300* audios	*CODE*
TOON-GAN	Cartoon Face to Human Face Translation using *Generative Adversarial Network* with *Semantic Loss*	*CODE*
AI-SPY	Collected an infodemic dataset of *200 videos* to perform rule & frame-based *visual fake news detection*	*CODE*
EMO-280	A *deep CNN* to perform *fine-grained emotion classification* on *AarogyaSetu* data by *transfer learning*	*CODE*
FAKETALK	*Sentiment* Analysis on *Twitter Infodemic* using TextBlob, Affin; *Misinformation Topic* Modeling using *LDA*	*CODE*
WHOAMI	A *residual network* for *image-based human reidentification* for biometric devices on *self curated* data	*CODE*
TOURISTICS	Mined *TripAdvisor* data and analyzed *customer preferences in tourism and hospitality* during *COVID-19*	*CODE*
VEHICLE TRACKER	A device using *Raspberry Pi, GPS, Accelerometer, Ultrasonic sensor & camera* to *detect road-violation*	*CODE*
CRYPTORESUME	Decentralized *Blockchain* to resist frauds, data leakage & *supporting accreditation* for resume validation	*CODE*
RECRUITQUERY	A low-cost *solution to GitHub recruiters* built using front-end layer over *GitHub API*, Re, Regex, Pygments	*CODE*

Technologies

LANGUAGES	Python, R, MATLAB, Simulink, C, C++, HTML, LATEX
LIBRARIES	TensorFlow, PyTorch, Keras, Scikitlearn, Pandas, NumPy, Matplotlib
SOFTWARES	Minitab, SPSS, NVivo, Tableau, PowerBi, MS Office
CERTIFICATIONS	Neural Networks and Deep Learning **[COURSERA]**, Deep Learning Fundamentals **[IBM]**, Deep Learning with Tensorflow **[IBM]**, Accelerated Deep Learning with GPUs **[IBM]**, Machine Learning with Python **[IBM]**, Data Visualization with Python **[IBM]**, Data Visualization with R **[IBM]**

Achievements

SCHOLARSHIP	Received *government scholarship from AICTE* for qualifying GATE entrance exam	*2019-2021*
FIRST RANK	*AIR 1*, B.El.Ed., DELHI UNIVERSITY, *National level entrance exam*	*2015*
FIFTH RANK	*Certified Ethical Hacking*, CYBER SECURITY CELL, IGDTUW, *scored 75/79*	*2017*
THIRD RANK	MEDIAEVAL 2020 *Coarse Classification* Subtask for Coronavirus and 5G Conspiracy detection	*2020*

Extracurricular Activity

WRITER, POET	Authored over *50 blogs*, *200 narratives* & *poetries* in English, Hindi & Urdu	*Website*
FOUNDER	*Upsilon Labs*, an initiative to support collaborations for *interdisciplinary research* in *AI*	
COORDINATOR	*Taarangana*: The annual fest, IGDTUW	