Chahat Raj

PhD in Computer Science | George Mason University

🌐 chahatraj.github.io   @ craj@gmu.edu   github.com/chahatraj   🎓 Google Scholar

Education

Present **Aug 2022**	**George Mason University** Ph.D. in Computer Science Advisors: Ziwei Zhu, Antonios Anastasopoulos	**Fairfax, USA**
Aug 2021 **Aug 2019**	**Delhi Technological University (DTU)** Masters in Information Systems (Research Track) Advisor: Priyanka Meel	**Delhi, India**
May 2019 **Aug 2015**	**Indira Gandhi Delhi Technical University for Women (IGDTUW)** Bachelors in Computer Science & Engineering	**Delhi, India**

Experience

Present **May 2024**	**University of Washington	The Information School** *Researcher	Advisor: Aylin Caliskan* <u>Project</u>: Social Biases in Visual Question Answering in Generative AI.	**Seattle, USA**
Aug 2024 **May 2024**	**George Mason University	School of Computer Science** *Graduate Research Assistant	Advisors: Ziwei Zhu, Antonios Anastasopoulos* <u>Project</u>: Exploring Stereotypical Associations in Large Vision-Language Models through generative tasks - image generation and question answering.	**Fairfax, USA**
Aug 2023 **May 2023**	**George Mason University	School of Computer Science** *Graduate Research Assistant	Advisor: Ziwei Zhu* <u>Project</u>: Fairness and Interpretability of Transformer Models.	**Fairfax, USA**
Jul 2022 **Jun 2021**	**University of Technology Sydney	School of Computer Science** *Visiting Scholar	Advisor: Mukesh Prasad* <u>Projects</u>: Disaster Fundraising on Social Media Analysis with the Australian Red Cross, AI integration in aboriginal and indigenous communities' lifestyle, Web information pollution detection (cyberbullying, hate, and offensive speech), Machine learning-based decision-making in clinical vertigo diagnosis.	**Sydney, Australia**
Aug 2021 **May 2021**	**Indian Institute of Management Raipur (IIM-R)** *Researcher	Advisor: Manojit Chattopadhyay* <u>Projects</u>: Cryptocurrencies' price prediction, Analysing causal relationships between stock market behavior and societal events.	**Remote**
Aug 2022 **Aug 2019**	**Delhi Technological University (DTU)** *Graduate Student Researcher	Advisor: Priyanka Meel* <u>Projects</u>: Developing neural network frameworks to detect antisocial web content (fake news, infodemic, misinformation, disinformation, rumor, death hoax, and clickbait), Infodemic impact analysis.	**Delhi, India**

Doctoral Publications

[S.2]   **BiasDora: Exploring Hidden Biased Associations in Vision-Language Models** [PDF | Code]
Chahat Raj, Anjishnu Mukherjee, Aylin Caliskan, Antonios Anastasopoulos, Ziwei Zhu
In Submission   [2024]

[C.7]   **Breaking Bias, Building Bridges: Evaluation and Mitigation of Social Biases in LLMs via Contact Hypothesis**
[PDF | Code]
Chahat Raj, Anjishnu Mukherjee, Aylin Caliskan, Antonios Anastasopoulos, Ziwei Zhu
AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society   [AIES'24]

[C.6]   **SALSA: Salience-Based Switching Attack for Adversarial Perturbations in Fake News Detection Models** [PDF |
Code]
Chahat Raj*, Anjishnu Mukherjee*, Hemant Purohit, Antonios Anastasopoulos, Ziwei Zhu
European Conference on Information Retrieval   [ECIR'24]

[C.5] **Global Voices, Local Biases: Socio-cultural Prejudices across Languages** [PDF | Code]
Anjishnu Mukherjee*, Chahat Raj*, Ziwei Zhu, Antonios Anastasopoulos
Conference on Empirical Methods in Natural Language Processing   **[EMNLP'23]**

[C.4] **True and Fair: Robust and Unbiased Fake News Detection via Interpretable Machine Learning** [PDF | Code]
Chahat Raj, Anjishnu Mukherjee, Ziwei Zhu
AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society   **[AIES'23]**

Pre-Doc Publications

[J.7] **Machine Learning Models help Differentiate between Causes of Recurrent Spontaneous Vertigo** [PDF]
Chao Wang, Allison S Young, Chahat Raj, Andrew P Bradshaw, Benjamin Nham, Sally M Rosengren, Zeljka Calic, David Burke, G Michael Halmagyi, Gnana K Bharathy, Mukesh Prasad, Miriam S Welgampola
Journal of Neurology   **[JoN'24]**

[J.6] **Analyzing Sentiments Towards E-levy Policy Implementation in Ghana using Twitter Data** [PDF]
Peter Appiahene, Stephen Afrifa, Emmanuel Kyei Akwah, Arjun Choudhry, Inder Khatri, Chahat Raj, Mukesh Prasad
International Journal of Information Technology   **[IJIT'24]**

[C.3] **Understanding Social Media Engagement in Response to Disaster Fundraising Attempts During Australian Bushfires** [PDF]
Yohei Nii, Chahat Raj, Muhammad Salman Tiwana, Mahendra Samarawickrama, Simeon Simoff, Tony Jan, Mukesh Prasad
International Conference on Intelligent Vision and Computing   **[ICIVC'22]**

[C.2] **The Effectiveness of Social Media Engagement Strategy on Disaster Fundraising** [PDF]
Vivek Velivela, Chahat Raj, Muhammad Salman Tiwana, Raj Prasanna, Mahendra Samarawickrama, Mukesh Prasad
International Conference on Information Systems for Crisis Response and Management   **[ISCRAM'22]**

[J.5] **People Lie, Actions Don't! Modeling Infodemic Proliferation Predictors among Social Media Users** [PDF]
Chahat Raj, Priyanka Meel
Technology in Society   **[TiS'22]**

[S.1] **Is Dynamic Rumor Detection on Social Media Viable? An Unsupervised Perspective** [PDF]
Chahat Raj, Priyanka Meel
In Submission   **[2022]**

[J.4] **Cyberbullying Detection: Hybrid Models based on Machine Learning and Natural Language Processing Techniques** [PDF]
Chahat Raj, Ayush Agarwal, Gnana Bharathy, Bhuva Narayan, Mukesh Prasad
Electronics   **[Electronics'21]**

[J.3] **Machine Learning Techniques for Differential Diagnosis of Vertigo and Dizziness: A Review** [PDF]
Varad Kabade, Ritika Hooda, Chahat Raj, Zainab Awan, Allison Young, Miriam Welgampola, Mukesh Prasad
Sensors   **[Sensors'21]**

[J.2] **ARCNN Framework for Multimodal Infodemic Detection** [PDF]
Chahat Raj, Priyanka Meel
Neural Networks   **[NeuNet'21]**

[J.1] **ConvNet Frameworks for Multi-modal Fake News Detection** [PDF]
Chahat Raj, Priyanka Meel
Applied Intelligence   **[APIN'21]**

[C.1] **Microblogs Deception Detection using BERT and Multiscale CNNs** [PDF]
Chahat Raj, Priyanka Meel
Global Conference for Advancement in Technology   **[GCAT'21]**

[W.1] **An Ensemble-based Multimodal Approach for Coronavirus and 5G Conspiracy Tweet Detection** [PDF]
Chahat Raj, Mihir P Mehta
MediaEval   **[MediaEval'20]**

Talks

"A Psychological View to Social Biases in LLMs"
> SouthNLP @ Emory University   April 2024 (Georgia, USA)

"Cyberbullying Monitoring"
> ML4AU Research Showcase Event   2021 (Remote)

"Fake News on Online Social Networks"

> ICPCCAI, JECRC University   2020 (Remote)

Awards

CAHMP Fellowship @ George Mason University, 2024 For summer research on social bias assessment in visual question answering.

Best Paper Award @ MASC-SLL 2024, Johns Hopkins University For the paper 'A Psychological View to Social Bias in LLMs: Evaluation and Mitigation'.

Summer Graduate Research Award @ George Mason University, 2023 For performing research on 'Explainability and Robustness of Debiasing Approaches for Transformers'.

Travel Grant by AAAI/ACM AIES 2023 Funded $1000 to travel to Montreal, Canada to attend the AIES conference.

Research Excellence Award @ Delhi Technological University 2023 ($\times 2$) **& 2022** Received three Commendable Research Awards with a total cash prize of INR 150k by DTU, Delhi, for the research published in reputed scientific journals.

Graduate Scholarship @ Delhi Technological University 2019 Received the AICTE scholarship of INR 297k for qualifying the GATE exam

Teaching

CS 108 Introduction to Computer Programming, GMU *Teaching Assistant*   Spring'24
> Responsible for teaching labs, one-to-one student tutoring, creating lab modules, assignment grading, and exam invigilation.

CS 478 Natural Language Processing, GMU *Teaching Assistant*   Fall'23
> Delivered ad-hoc lectures, student tutoring, teaching labs, and assignment grading.

COMP 502 Mathematical Foundations of Computing, GMU *Teaching Assistant*   Fall'23
> Responsible for one-to-one student tutoring sessions, and assignment grading.

CS 112 Introduction to Python Programming, GMU *Teaching Assistant*   Fall'22, Spring'23
> Responsible for teaching labs, one-to-one student tutoring, creating lab modules, assignment grading, and exam invigilation.

Academic Service

Reviewer	ACM Transactions on Intelligent Systems and Technology 2024, LTEDI @ EACL 2024, TrustNLP 2024, CSCW 2024, NeurIPS 2023, Elsevier & Springer Journal papers
Sub-Reviewer	EMNLP'24, AIES'24

Student Mentorship

> Samyak Jain [MS, GMU]
> Diwita Banerjee [MS, GMU]