

# Sunny Rai

She/her/hers  
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## Research Areas

AI for Social Good, Creative Text Processing, Natural Language Processing

## Education

### Ph.D. in Computer Engineering

Dec'14-Dec'20

Faculty of Technology, University of Delhi (*Institute of Eminence*), India

- Dissertation: *Computational Metaphor Processing for English Language*
- Advisor: Dr. Shampa Chakraverty, & Dr. Devendra K Tayal

### Master of Technology in Information Security (with Honors)

Aug'12-Jul'14

Netaji Subhas University of Technology, Delhi, India (formerly AIACTR)

- Dissertation: *Automated Generation of Synset in WordNets for low resource languages*

### Bachelor of Technology in Information Technology

Aug'08-Jul'12

Guru Gobind Singh Indraprastha University, Delhi, India

## Work Experience

### University of Pennsylvania, USA.

Oct'22 - present

Postdoctoral Research Fellow, Department of Computer and Information Science

- Advisors: Dr. Sharath Chandra Guntuku and Dr. Lyle Ungar

### École Centrale School of Engineering, Mahindra University, India.

Dec'20 - Sept'22

Assistant Professor, Computer Science and Engineering

### University of Delhi, India.

Dec'14- Jul'18

Teaching Assistant

## Publications

### Conference/Workshop

- Y'23 Cho, Y.M., **Rai, S.**, Ungar, L., Sedoc J., & Guntuku, S.C. (2023). An Integrative Survey on Mental Health Conversational Agents to Bridge Computer Science and Medical Perspectives. To appear in EMNLP'23, Singapore.
- Y'23 Havaladar, S., Singhal, B., Rai, S., Liu, L., Guntuku, S. C., & Ungar, L. (2023, July). Multilingual Language Models are not Multicultural: A Case Study in Emotion. WASSA, ACL'23 **Best Paper Award**
- Y'23 Joseph, R., Liu, T., Ng, A. B., See, S., & Rai, S. (2023, July). NewsMet: A 'Do It All'dataset of contemporary Metaphors in News headlines. ACL-Findings'23.
- Y'23 Aggarwal, A., Rai, S., Giorgi, S., Havaladar, S., Sherman, G., Mittal, J., & Guntuku, S. C. (2023, April). A Cross-Modal Study of Pain Across Communities in the United States. In Companion Proceedings of the ACM Web Conference 2023 (pp. 1050-1058). Available at [Link](#)
- Y'23 Bogireddy, N. R., Suresh, S., & Rai, S. (2023, April). I'm out of breath from laughing! I think? A dataset of COVID-19 Humor and its toxic variants. In Companion Proceedings of the ACM Web Conference 2023 (pp. 1004-1013). Available at [Link](#)
- Y'23 Baheti, B., Rai, S., Innani, S., Mehdiratta, G., Nasrallah, M. P., & Bakas, S. (2023). Detecting Histologic Glioblastoma Regions of Prognostic Relevance. arXiv preprint arXiv:2302.00669.
- Y'22 Rai, S., Joseph, R., Thakur, P. S., & Khaliq, M. A. (2022). Identifying Human Needs through Social Media: A study on Indian cities during COVID-19. SocialNLP 2022, 54. Available at [Link](#)
- Y'21 Khaliq, M., Joseph, R., & Rai, S. (2021, December). #covid is war and #vaccine is weapon? COVID-

19 metaphors in India. In Proceedings of the 18th International Conference on Natural Language Processing (ICON) (pp. 431-438). Available at [Link](#)

Y'18 Rai, S., Garg, A., & Chakraverty, S. (2019). Understanding the role of visual features in Emoji Similarity. In Advances in Data Science: Third International Conference on Intelligent Information Technologies, ICIIT 2018, Chennai, India, December 11–14, 2018, Proceedings 3 (pp. 89-97). Springer Singapore. [Link](#)

Y'17 Rai, S., & Chakraverty, S. (2017). Metaphor detection using fuzzy rough sets. In Rough Sets: International Joint Conference, IJCRS 2017, Olsztyn, Poland, July 3–7, 2017, Proceedings, Part I (pp. 271-279). Springer International Publishing. [Link](#)

Y'16 Rai, S., Chakraverty, S., & Tayal, D. K. (2016, June). Supervised metaphor detection using conditional random fields. In Proceedings of the Fourth Workshop on Metaphor in NLP (pp. 18-27). [Link](#)

#### Journal

Y'20 Rai, S., & Chakraverty, S. (2020). A survey on computational metaphor processing. ACM Computing Surveys (CSUR), 53(2), 1-37. [Link](#)

Y'19 Rai, S., Chakraverty, S., Tayal, D. K., Sharma, D., & Garg, A. (2019). Understanding metaphors using emotions. New Generation Computing, 37, 5-27. [Link](#)

Y'18 Rai, S., Chakraverty, S., Tayal, D. K., & Kukreti, Y. (2018). A study on impact of context on metaphor detection. The Computer Journal, 61(11), 1667-1682. [Link](#)

Y'15 Jain, A., Tayal, D. K., & Rai, S. (2015). Shrinking digital gap through automatic generation of WordNet for Indian languages. AI & SOCIETY, 30, 215-222. [Link](#)

#### Non Archival

Y'23 Rai, S., Francisco, A., Giorgi, S., Curtis, B., Ungar, L., and Guntuku, S.C. (2023). Studying Racial Heterogeneity in Language Markers of Depression. PLENARY TALK at IC2S2'23, Denmark.

Y'23 Aggarwal, A., Rai, S., Giorgi, S., Havaladar, S., Sherman, G., Mittal, J., and Guntuku, S.C. (2023). A Cross-Modal Study of Pain Across Communities in the United States. [Workshop on Trustworthy AI](#), Jan 5-6, 2023 - Microsoft Research, Bengaluru, India. POSTER.

Y'22 Joseph, R., Rai, S., Thakur, P.S., & Khaliq, M.A. (2022). Pandemic, People and Pattern of needs : Emerging trends in Indian society during COVID-19. In 8<sup>th</sup> IC2S2 2022.

Y'19 Uma Maheswari Gollapudi, Rahul Arulkumaran, Manikumar Perla, Sai Hitesh Jonnalagadda, Amitava Das and **Sunny Rai**. "*Understanding User Vulnerability Towards Radicalization On Twitter*". IC2S2 2019.

### Volunteering/Service

#### Reviewer

1. Conferences: ACL'23, ICWSM'23, EACL'23, AACL'[21-22], EMNLP'[21-23]
2. Workshops: NAACL-SRW'22
3. Journals: ACM Transactions on Asian and Low Resource Language Information Processing (TALLIP), Natural Language Engineering, IEEE Access, Neurocomputing, Computer Applications in Engineering Education (Wiley), Frontiers in Psychology

#### Organizer/Chair

1. Organizer/TA, Summer Institute for Computational Social Science, University of Pennsylvania, 2023
2. Program Committee Member: ICETCI'22
3. Publication chair, Session chair: ICETCI'22 ([link](#))

### Invited Talks

1. Penn ASSET/IBI Symposium on Trustworthy AI for Health Care on *Multimodal explainable AI for prognostic stratification of glioblastoma patients*. Oct 6, 2023

2. IBI-GCB Retreat at the University of Pennsylvania, Invited Talk on *Language Models/ NLP Chatbots*. Sept, 2023.
3. "Racial Heterogeneity in Language Markers of Depression" at CLunch (Computational Linguistics Lunch) at University of Pennsylvania.
4. 'Multilingual Zero Shot Learning' in Nov'21, ATAL-FDP, a Govt. of India Initiative
5. 'Robotics: The Current Scenario and Trends' in Jun'20, Mahindra Technical Academy

## Awards & Scholarships

1. First Prize awarded to "Characterizing the Geographical Landscape of COVID-19 Misinformation from Twitter" (under Rachleff Scholars Program at UPenn) Role: co-advisor
2. Best Paper Award at WASSA, ACL'2023.
3. Abstract selected for Early Career Research Plenary Talk at IC2S2, 2023, Denmark. (16 Plenaries were selected out of 918 submissions)
4. First Prize at Yale Undergraduate Research Symposium for Project "Mental Health Expressions in India", (Role-Co-advisor/Author)
5. Grace Hopper Celebration'22 Faculty Scholarship
6. UGC-NET (2018)- Ranked in Top 6% in National Exam [ [About UGC-NET](#)]
7. Travel Award to attend NAACL 2016, Netaji Subhas Institute of Technology, University of Delhi.
8. GATE (2012, 2014) ( 97 percentile): [[About GATE](#)]
9. Director's Merit Award in Undergrad for Academic Excellence, 2011

## Professional Memberships

1. Member, Association of Computing Machinery
2. Member, Association of Computational Linguistics.
3. Member, The Institution of Engineers (India) ([IEI](#))

## Personal Details

### Languages

*Hindi - Native, English - Fluent*

### Correspondence

*299, Towne Hall, 3330 Walnut St, Philadelphia  
PA, USA -19104*

## Advisors

### Dr. Sharath Chandra Guntuku

*University of Pennsylvania, Philadelphia, PA, USA*

*sharathg@seas.upenn.edu*

### Dr. Lyle Ungar

*University of Pennsylvania, Philadelphia, PA, USA*

*ungar@seas.upenn.edu*