

Sree Bhattacharyya

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in Sree Bhattacharyya 🖱 Personal Webpage

Education

Ph.D. in Informatics

Aug 2023 – present | State College, PA

Pennsylvania State University

Concentration: Data Sciences and Artificial Intelligence, Advisor: Dr. James Z. Wang ☑

Research Areas: Affective Computing, Multimodal AI, LLMs

Bachelor of Technology in Computer Science and Technology

2018 – 2022 | Howrah, India

Indian Institute of Engineering Science and Technology, Shibpur, India ☑

CGPA: 9.86/10, University Rank: 3/600, Transcripts ☑

Publications

[1] A Heterogeneous Multimodal Graph Learning Framework for Emotion Recognition in Social Networks

Sree Bhattacharyya, Shuhua Yang, James Z. Wang

Under Review at the 12th International Conference on Affective Computing and Intelligent Interaction (ACII), 2024.

[2] Link Prediction for Social Networks using Representation Learning and Heuristic-based Features ☑

Samarth Khanna*, Sree Bhattacharyya*, Sudipto Ghosh, Kushagra Agarwal, Asit Kumar Das

9th International Workshop on Mining Actionable Insights from Social Networks (MAISoN) at the 32nd International Joint Conference on Artificial Intelligence (IJCAI), 2023.

*equal contribution

[3] Towards Bengali WordNet Enrichment using Knowledge Graph Completion Techniques ☑

Sree Bhattacharyya, Abhik Jana

Proceedings of the Workshop on Resources and Technologies for Indigenous, Endangered and Lesser-resourced Languages in Eurasia (EURALI) within the 13th Language Resources and Evaluation Conference (LREC), 2022

Poster ☑, Talk ☑

Research Experience

Graduate Research Assistant

Aug 2023 – present | State College, PA

The Pennsylvania State University

Advisor: Dr. James Z. Wang

• Community Data Infrastructure for Bodily Expressed Emotions (NSF CCRI) (Aug 2023 - Present):

- Building a large-scale video dataset, annotated for bodily expressed emotions, and associated tools and APIs.
- Responsible for building the crowdsourcing website.
- Developing a novel sampling scheme for obtaining annotations balanced by emotion classes, that uses iterative annotations and classification.

• Contextual Emotion Understanding in Social Networks [1] (Aug 2023 - March 2023):

- Led research to propose a novel formulation for prediction of personalized emotions of users in a social network.
- Developed a novel framework that uses multimodal images and user data, with heterogeneous graph learning.
- Achieved F1 scores ~ 0.78 on a benchmark dataset based on FlickrR, surpassing existing methods by 23% - 43%.

• Awareness of LLMs about subjective human phenomena:

- Cultural understanding in LLMs (Feb 2023 - Present):

- Co-advisors: Dr. Aylin Caliskan ☑ (UW, Seattle), Dr. Antonios Anastasopoulos ☑ (George Mason University)
- Creating a benchmark for cultural and social knowledge in LLMs.
- Plan to propose a novel NLG evaluation method for cultural awareness.

- Emotion Understanding in Large Multimodal Models (LMMs) (January 2023 - Present):

- Evaluating LMMs on the most widely-used evoked emotion datasets involving visual media (including in-the-wild, and artistic images) through multimodal prompts.

- Developing a thorough evaluation strategy that uses multiple types of prompting, and different levels of probing (single answers, explanations).
- Developing a custom evaluation method for measuring emotional sensitivity.

Skills: Python, PyTorch, PyTorch Geometric, LLMs, HTML, PHP, MySQL

Undergraduate Research Assistant (Thesis)

Oct 2021 – May 2022 | Howrah, India

Indian Institute of Engineering Science and Technology, Shibpur

Advisor: Dr. Asit Kumar Das

- **Classification of Alzheimer's Disease Progression using Functional MRIs (fMRIs):**

- Preprocessed fMRI data using fMRIPrep and NiLearn.
- Designed methodology to apply GCNs on a graph of regions of interest in the brain.

- **Link Prediction in Social Networks [2]:**

- Co-led a study comparing various feature representation methods for link prediction in social networks.
- proposed a combination of learned representations and heuristics as the best feature set for the link prediction task.

Skills: Python, Tensorflow, Ampligraph, KarateClub

Research Intern (DAAD-WISE Fellow) [3]

Feb 2021 – Sep 2021 | Hamburg, Germany

University of Hamburg

Advisor: Dr. Chris Biemann, Dr. Abhik Jana

- Worked on enriching a lexical resource (WordNet) for Bengali, a low-resource Indian language.
- Used knowledge graph completion techniques, and a distributional thesaurus to automatically improve word coverage in the WordNet.

Skills: Python, Tensorflow

Software Experience

Software Engineer

Jul 2022 – Aug 2023 | Bangalore, India

Microsoft (Azure Storage)

Software Engineer Intern

Jun 2021 – Jul 2021 | Remote

Microsoft (Digital Security and Risk Engineering)

Student Contributor

Sep 2020 – Mar 2021 | Remote

CMS GEM Collaboration: CERN

Awards and Achievements

- **Jordan-Rednor Graduate Fellowship (Fall 2023):** merit-based fellowship from IST, Penn State.
- **Smt. Uma Rani Neogi Scholarship (March 2022):** female student with the highest CGPA across the university.
- **DAAD Working Internships in Science and Engineering fellowship** ☑ (2021)
- **IAS-INSANA Summer Research Fellowship (Indian Academy of Sciences' SRFP 2021)**
- **IIT Roorkee SPARK 2021** research fellowship
- 4-year long science Scholarship from **Jagadish Bose National Science Talent Search (JBNSTS) Organization** ☑ (2018-22 batch) for undergraduate studies

Academic Services

Reviewing: NAACL / ARR 2024, recognized as great review

Mentoring:

- Mentoring PSU Undergrad for NSF CCRI Project (Sept 2023 - Present)
- Mentored 5 girls in the Women in Technology (WIT) Chapter at GDSC, IIST, who bagged offers at companies like NatWest Group, Mercari (Japan), Google, and Microsoft.

Extra-curricular Activities

- Theatre actor in 'Sayak' (2009-15): professional theatre in India.
- Indian classical and folk music vocals: training and professional performer on television and radio.