

# Subhabrata Dutta

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NLP researcher with broad interest in Machine Learning in general. Currently, working as a Senior Research Associate at [Laboratory for Computational Social Systems, IIT Delhi](#), mentored by [Dr. Tanmoy Chakraborty](#) and [Prof. Soumen Chakrabarti](#). Current research interest revolves around Large Language Models; precisely focused on reasoning, prompt engineering, and interpretation. Additionally, shares interest in Temporal Graph Representation Learning. Submitted doctoral thesis, titled *Engagement to Persuasion: A Computational Study on Online Social Discourse*, in 2023. Doctoral research is centered around the qualitative and quantitative analysis of online social platforms.

## Education

- Ph.D. 2023  
*Department of Computer Science and Engineering, Jadavpur University*
- M.E. (Computer Science) 2016  
*Department of Computer Science and Engineering, Jadavpur University*
- B.E. (Computer Science) 2014  
*Department of Computer Science and Engineering, Jadavpur University*

## Research Experience

- Senior Research Associate 2022-  
*IIT Delhi*

Project title: “*Separating the what from the how in Pretrained Language Models: A step towards generic AP*”

Funded by: Defence Research and Development Organisation (DRDO), Ministry of Defense, Govt. of India.

Primarily exploring the reasoning and memorization abilities of LLMs; developed 1) framework for RL-based tool-augmented learning of LLMs towards mathematical reasoning, 2) framework for multihop reasoning via separation of solver and generalizable decomposer modules. Currently working on mechanistic interpretability of LLM reasoning.

Project title: “*Exploring the roles of Network Topology, Temporal Online Interactions, and Downstream Tasks in Graph Representation*”

Funded by: Meta Inc.

Working on graph representation learning towards four major challenges: curvature-aware

rewiring to solve oversquashing and oversmoothing, inductive link prediction on temporal interaction networks, and, incremental learning on large dynamic graphs.

Project title: “*Mixed context learning with LLMs under Low-resource setting*”

Funded by: Adobe Research, India

Exploring the limits of in-context learning using LLMs with heterogeneous context-target pairing across languages, tasks, and modalities.

- Junior Research Fellow 2021-2022  
*Jadavpur University*

Project title: “*Claim Detection and Verification using Deep NLP: an Indian Perspective*”

Funded by: Defence Research and Development Organisation (DRDO), Ministry of Defense, Govt. of India.

Developed datasets for identification of factual claims in multilingual tweets.

- Junior Research Fellow 2018 – 2021  
*Jadavpur University*

West Bengal State Government Fellow

Conducted doctoral research on engagement mining on online social platforms.

## Teaching Experience

- Module titled ‘C programming and data structure’ 2018 – 2019  
*Jadavpur University, India*
- Module titled ‘C programming and data structure’ 2017 – 2018  
*Jadavpur University, India*
- Module titled ‘Computer Graphics’ 2017 – 2018  
*Jadavpur University, India*
- Module titled ‘Advanced data structures and algorithms’ 2017 – 2018  
*RCCIT, India*
- Module titled ‘Natural language processing’ 2017 – 2018  
*Aliah University, Kolkata*

## Technical Skills

- **Programming & Scripting:** Python, C
- **Programming Libraries:** PyTorch, Tensorflow

## Achievements

- Outstanding paper award ACL, 2023
- Secured All India Ranking 16 GATE (2014), Computer science and engineering
- Rank holder, Madhyamik Pariksha (2007), West Bengal Board of Secondary Education

## Publications

1. [Small Language Models Fine-tuned to Coordinate Larger Language Models improve Complex Reasoning](#)  
G Juneja\*, S Dutta\*, S Chakrabarti, S Manchanda, T Chakraborty  
*EMNLP 2023*
2. [Thus Spake ChatGPT: On the reliability of AI-based chatbots for science communication](#)  
S Dutta, T Chakraborty  
*CACM Opinion 2023*
3. [Multilingual LLMs are Better Cross-lingual In-context Learners with Alignment](#)  
E Tanwar\*, S Dutta\*, M Borthakur, T Chakraborty  
*ACL 2023* (selected as **Outstanding paper**)
4. [Hatemongers ride on echo chambers to escalate hate speech diffusion](#)  
V Goel\*, D Sahnan\*, S Dutta\*, A Bandhakavi, T Chakraborty  
*PNAS nexus 2023*
5. [Incomplete gamma integrals for deep cascade prediction using content, network, and exogenous signals](#)  
S Dutta, S Mittal, D Das, S Chakrabarti, T Chakraborty  
*IEEE TKDE 2022*
6. [Can Unsupervised Knowledge Transfer from Social Discussions Help Argument Mining?](#)  
S Dutta\*, J Juneja\*, D Das, T Chakraborty  
*ACL 2022*
7. [Semi-supervised stance detection of tweets via distant network supervision](#)  
S Dutta, S Caur, S Chakrabarti, T Chakraborty  
*WSDM 2022*
8. [Redesigning the transformer architecture with insights from multi-particle dynamical systems](#)  
S Dutta, T Gautam, S Chakrabarti, T Chakraborty  
*NeurIPS 2021* (selected as **Spotlight**)
9. [Hate is the new infodemic: A topic-aware modeling of hate speech diffusion on twitter](#)  
S Masud\*, S Dutta\*, S Makkar, C Jain, V Goyal, A Das, T Chakraborty  
*ICDE 2021*
10. [Deep exogenous and endogenous influence combination for social chatter intensity prediction](#)  
S Dutta, S Masud, S Chakrabarti, T Chakraborty  
*KDD 2020*

11. [Changing views: Persuasion modeling and argument extraction from online discussions](#)  
S Dutta, D Das, T Chakraborty  
*Information Processing & Management* 2020
12. [Modeling engagement dynamics of online discussions using relativistic gravitational theory](#)  
S Dutta, D Das, T Chakraborty  
*ICDM 2019*
13. [Into the Battlefield: Quantifying and modeling intra-community conflicts in online discussion](#)  
S Dutta, D Das, G Kaur, S Mongia, A Mukherjee, T Chakraborty  
*CIKM 2019*

[\*] Equal contribution as first author

## References

[Dr. Tanmoy Chakraborty](#)

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[Prof. Soumen Chakrabarti](#)

Professor, IIT Bombay

[soumen@cse.iitb.ac.in](mailto:soumen@cse.iitb.ac.in)