

SOMNATH BASU ROY CHOWDHURY

Residential Information

Carrboro, NC
Chapel Hill 27514, US.

Electronic Information

Web: cs.unc.edu/~somnath/
Email: somnath@cs.unc.edu

Research Interests

Trustworthy & Responsible AI, Efficient ML, Incremental/Online Learning.

Education

University of North Carolina (UNC) at Chapel Hill

Jan 2021 - present

Ph.D. in Computer Science

Advisor: Prof. [Snigdha Chaturvedi](#)

Thesis Committee: [M. Bansal](#), [G. Bertasius](#), [H. He](#), [A. McCallum](#)

Indian Institute of Technology (IIT) - Kharagpur, India

2013 - 2018

B.Tech. & M.Tech. (Dual Degree Hons.) in Electrical Engineering

Rank - 3/31

Minor in Computer Science & Engineering (CSE)

Micro-specialization in Embedded Wireless Systems (EWS)

Advisor: Prof. [Jayanta Mukhopadhyay](#)

Industry Experience

Adobe Research, College Park

May 2024 - Aug 2024

Research Intern, Document Intelligence Lab

Collaborators: [A. Nenkova](#), [V. Morariu](#)

Google Research, Mountain View

May 2023 - Aug 2023

Student Researcher, [Algorithms & Optimization team](#)

Collaborators: [A. Dubey](#), [N. Monath](#), [A. Beirami](#), [R. Kidambi](#)

Google Research, Mountain View

May 2022 - Dec 2022

Student Researcher, [Algorithms & Optimization team](#)

Collaborators: [A. Dubey](#), [K. Choromanski](#), [N. Monath](#)

Microsoft Corp., India

Jul 2019 - Dec 2020

Data Scientist II, Satori Knowledge Graph (Bing team)

Apple Inc., India

Jun 2018 - Jul 2019

Software Engineer, Identity Management Services (IdMS).

Publications

Google Scholar: [xGbyrIUAAAAJ](#).

Working Papers:

[26] **Fundamental Limits of Perfect Concept Erasure**

S. Basu Roy Chowdhury, A. Dubey, A. Beirami, R. Kidambi, N. Monath, A. Ahmed, S. Chaturvedi
(Under review) [[pdf](#)]

[25] **Towards Scalable Exact Machine Unlearning Using Parameter Efficient Fine-tuning**

S. Basu Roy Chowdhury, K. Choromanski, A. Sehanobish, A. Dubey, S. Chaturvedi
Preliminary version at Safe GenAI Workshop, NeurIPS 2024 [[pdf](#)]

Conference and Journal papers:

[24] **Structured Unrestricted-Rank Matrices for Parameter Efficient Finetuning**

A. Sehanobish*, A. Dubey*, K. Choromanski*, S. Basu Roy Chowdhury*, D. Jain, V. Sindhwani,
S. Chaturvedi
Proceedings of NeurIPS 2024. [[pdf](#)]

- [23] **Fast Tree-Field Integrators: From Low Displacement Rank to Topological Transformers**
K. Choromanski, A. Sehanobish, S. Basu Roy Chowdhury, H. Lin, A. Dubey, T. Sarlos, S. Chaturvedi
Proceedings of NeurIPS 2024. [\[pdf\]](#)
- [22] **Exploring Safety-Utility Trade-Offs in Personalized Language Models**
A. Rao Vijjini*, S. Basu Roy Chowdhury*, S. Chaturvedi
Proceedings of EMNLP Findings 2024. [\[pdf\]](#)
- [21] **Embodied AI with Two Arms: Zero-Shot Learning, Safety, and Modularity**
J. Varley*, S. Singh*, D. Jain*, K. Choromanski*, A. Zeng, S. B. Roy Chowdhury, A. Dubey, V. Sindhwani
Proceedings of IROS 2024 (Oral). [\[pdf\]](#)
🏆 **Best RoboCup Paper Award**
🏆 **Nominee for Best Safety, Security, and Rescue Robotics Papers.**
- [20] **Incremental Extractive Opinion Summarization Using Cover Trees**
S. Basu Roy Chowdhury, N. Monath, A. Dubey, M. Zaheer, A. McCallum, A. Ahmed, S. Chaturvedi
Proceedings of TMLR 2024. [\[pdf\]](#)
- [19] **Enhancing Group Fairness in Online Settings Using Oblique Decision Forests**
S. Basu Roy Chowdhury, N. Monath, A. Beirami, R. Kidambi, A. Dubey, A. Ahmed, S. Chaturvedi
Proceedings of ICLR 2024 (Spotlight). [\[pdf\]](#)
- [18] **Robust Concept Erasure via Kernelized Rate Distortion Maximization**
S. Basu Roy Chowdhury, N. Monath, A. Dubey, A. Ahmed, S. Chaturvedi
Proceedings of NeurIPS 2023. [\[pdf\]](#)
- [17] **Unsupervised Opinion Summarization Using Approximate Geodesics**
S. Basu Roy Chowdhury, N. Monath, A. Dubey, A. Ahmed, S. Chaturvedi
Preliminary version at New Frontiers in Summarization Workshop
Proceedings of EMNLP Findings 2023. [\[pdf\]](#)
- [16] **Aspect-Aware Unsupervised Extractive Opinion Summarization**
H. Li, S. Basu Roy Chowdhury, S. Chaturvedi
Proceedings of ACL Findings 2023. [\[pdf\]](#)
- [15] **Efficient Graph Field Integrators Meet Point Clouds**
K. Choromanski*, A. Sehanobish*, H. Lin*, Y. Zhao*, E. Berger, A. Pan, T. Parshakova, D. Watkins, T. Zhang, V. Likhoshesterov, S. Basu Roy Chowdhury, A. Dubey, D. Jain, T. Sarlos, S. Chaturvedi, A. Weller
Proceedings of ICML 2023. [\[pdf\]](#)
- [14] **Sustaining Fairness via Incremental Learning**
S. Basu Roy Chowdhury and S. Chaturvedi
Proceedings of AAAI 2023 (Oral). [\[pdf\]](#)
- [13] **Learning Fair Representations via Rate-Distortion Maximization**
S. Basu Roy Chowdhury and S. Chaturvedi
Proceedings of TACL (Oral at EMNLP 2022). [\[pdf\]](#) [\[MIT Press\]](#)
- [12] **Unsupervised Extractive Opinion Summarization Using Sparse Coding**
S. Basu Roy Chowdhury, C. Zhao, S. Chaturvedi
Proceedings of ACL 2022. [\[pdf\]](#)
- [11] **Read Top News First: A Document Reordering Approach for Multi-document News Summarization**
C. Zhao*, T. Huang*, S. Basu Roy Chowdhury, M. Chandrasekaran, K. McKeown, S. Chaturvedi
Proceedings of ACL Findings 2022 (short). [\[pdf\]](#)
- [10] **Adversarial Scrubbing of Demographic Information for Text Classification**
S. Basu Roy Chowdhury, S. Ghosh, Y. Li, J. Oliva, S. Srivastava, S. Chaturvedi
Proceedings of EMNLP 2021. [\[pdf\]](#)
- [9] **Is Everything in Order? A Simple Way to Order Sentences**
S. Basu Roy Chowdhury*, F. Brahman*, S. Chaturvedi
Proceedings of EMNLP 2021. [\[pdf\]](#)

- [8] **Learning beyond datasets: Knowledge Graph Augmented neural networks for NLP**
K.M. Annervaz*, S. Basu Roy Chowdhury*, A. Dukkipati
Proceedings of NAACL 2018 (Oral). [\[pdf\]](#)

Other refereed publications:

- [7] **Does Commonsense help in detecting Sarcasm?**
S. Basu Roy Chowdhury and S. Chaturvedi
Proceedings of Insights from Negative Results in NLP workshop, EMNLP 2021. [\[pdf\]](#)
- [6] **Towards Efficient Data Normalization Using Grammar-based Parsing**
S. Basu Roy Chowdhury, A. Mishra, A. Banerjee
Proceedings of Microsoft Journal of Applied Research, MSJAR 2020. [\[pdf\]](#)
- [5] **Instance-based Inductive Deep Transfer Learning by Cross-Dataset Querying with LSH**
S. Basu Roy Chowdhury, K.M. Annervaz, A. Dukkipati.
Proceedings of DeepLo Workshop, EMNLP 2019. [\[pdf\]](#)
- [4] **AdGAP: Advanced Global Average Pooling**
A. Ghosh, B. Bhattacharya*, S. Basu Roy Chowdhury*
Proceedings of Student Abstract and Poster Program, AAAI 2018. [\[pdf\]](#)
- [3] **Training Autoencoders in Sparse Domain**
B. Bhattacharya, A. Ghosh*, S. Basu Roy Chowdhury*
Proceedings of Student Abstract and Poster Program, AAAI 2018. [\[pdf\]](#)
- [2] **Handwriting Profiling using Generative Adversarial Networks**
A. Ghosh*, B. Bhattacharya*, S. Basu Roy Chowdhury*
Proceedings of Student Abstract and Poster Program, AAAI 2017. [\[pdf\]](#)
- [1] **SAD-GAN: Synthetic Autonomous Driving using Generative Adversarial Networks**
A. Ghosh*, B. Bhattacharya*, S. Basu Roy Chowdhury*
Proceedings of DLAI Workshop, NeurIPS 2016. [\[pdf\]](#)

(* = equal contribution)

Theses:

- [1] **Lung Cancer segmentation in 3D CBCT Images**
Advisor: Prof. [Jayanta Mukhopadhyay](#)
M.Tech. Thesis, IIT Kharagpur [\[pdf\]](#)

Research Experience

| | |
|---|-----------------------|
| Statistics and Machine Learning Group, IISc Research Intern, Topic: Low Resource NLP Advisor: Prof. Ambedkar Dukkipati | (May 2017 - Apr 2018) |
| Accenture Technologies Lab (ATL) Research Intern, Topic: Knowledge graph enhanced NLP Advisor: K. M. Annervaz (ATL), Prof. Ambedkar Dukkipati , (IISc) | (May 2017 - Jul 2017) |
| Visual Information Processing Lab - IIT Kharagpur Undergraduate Researcher, Topic: Lung Cancer Segmentation in 3D CBCT Advisor: Prof. Jayanta Mukhopadhyay | (Jul 2016 - May 2018) |
| National Brain Research Centre - Gurgaon, India IAS Summer Fellow, Topic: Image Processing in MRI scans Advisor: Prof. Pravat Mandal | (May 2015 - Jul 2015) |

Talks

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| ‘Concept Manipulation in Deep Learning Models’, Jane Street, New York | (Apr 2023) |
| ‘Learning Fair Representations For Equitable ML’, IVLC Seminar, UNC CH | (Jan 2023) |
| ‘Adversarial Debiasing in NLP’, NLP Course, UNC CH | (Apr 2022) |
| ‘Probabilistically grounded word embeddings’, Bing paper reading forum, <i>Microsoft</i> | (Nov 2019) |
| ‘Secure Machine Learning’, <i>Apple India Research Forum</i> | (Apr 2019) |

Professional Service/ Teaching

- **Program Committee Member/ Reviewer**

ICLR (2024-), NeurIPS (2023-), AISTATS (2025-), TMLR (2024-), ACL (2022-), ARR (2021-), EMNLP (2021-), LREC-COLING (2024-), NAACL (2024), AAAI (2023-), COLM (2024-), ICRA (2024)

[Narrative Understanding Workshop](#), NAACL (2021-2022)

2nd workshop on [Insights from Negative Results in NLP](#), EMNLP (2021)

- *Teaching Assistant*

(EE21101) Signals and Networks Lab, IIT Kharagpur 2018

(EE19001) Electrical Technology Lab, IIT Kharagpur 2017

Academic Achievements

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| • Best RoboCup Paper Award at IROS | 2024 |
| • Dissertation Completion Fellowship - Awarded to ~5 candidates across UNC-CH | 2024 |
| • Top Candidate for Jane Street Graduate Research Fellowship | 2023, 2024 |
| • Student Volunteer Award, ACL 2022 (<i>declined</i>) | 2022 |
| • Travel Award from GPSG, UNC Chapel Hill for EMNLP 2021 (<i>declined</i>) | 2021 |
| • All India Rank 7 (EECS) - Nationwide Education & Scholarship Test (NEST - II). | 2017 |
| • ACM-ICPC Asia-Chennai Regionals - Rank 33/1100 | 2015 |
| • IAS Summer Research Fellowship - National Brain Research Center | 2015 |
| • INSPIRE Scholarship - Top 1 percentile in ISC (Grade 12). | 2013 |
| • Top ranks - JEE (Mains, Advanced): 99+ percentile, Top 1% in ISCE & ISC | 2013 |

Miscellaneous Activities

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| • <i>Winner</i> of the WaterAid Marathon Hyderabad - 5km category | 2019 |
| • <i>Best Innovation Award</i> - Apple EMEA Hackathon | 2018 |
| • <i>Special Mention in Technology GC</i> - Graduating batch LBS Hall. | 2018 |
| • <i>Silver-medal</i> winning Data Analytics team - Inter-hostel GC | 2017 |
| • <i>Gold-medal</i> winning Hardware Modeling team- Inter-hostel GC | 2015 |
| • 5 th year distinction in <i>Fine Arts</i> and Painting - All India Art and Crafts Society | 2010 |