

# SOMNATH BASU ROY CHOWDHURY

## Residential Information

Carrboro, NC  
Chapel Hill 27514, US.

## Electronic Information

Web: [cs.unc.edu/~somnath/](http://cs.unc.edu/~somnath/)  
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## Research Interests

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

## Education

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**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

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**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

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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)*. [\[pdf\]](#)
- [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**

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

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- **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)

2<sup>nd</sup> 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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• 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 <sup>th</sup> year distinction in <i>Fine Arts</i> and Painting - All India Art and Crafts Society	2010