

# SOMNATH BASU ROY CHOWDHURY

## Residential Information

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## Electronic Information

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## Research Interests

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Machine Learning, Statistical Natural Language Processing, Knowledge Graphs. Current Focus: Graph neural network applications in natural language and commonsense knowledge incorporation in NLP tasks.

## Education

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### University of North Carolina (UNC) at Chapel Hill

2021 - present

Ph.D. in Computer Science

Advisor: Prof. [Snigdha Chaturvedi](#)

### Indian Institute of Technology (IIT) - Kharagpur, India

2013 - 2018

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

Minor in Computer Science & Engineering (CSE)

Micro-specialization in Embedded Wireless Systems (EWS)

Advisor: Prof. [Jayanta Mukhopadhyay](#)

## Publications

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Google Scholar: [xGbyrIUAAAAJ](#). Citations: 55; h-index: 3; i10-index: 3; (Note: Most computer science researchers publish more in conferences than journals. Conferences are considered equally or more prestigious than journals, all conferences below including short papers have an acceptance rate < 25%. )

### Peer reviewed publications:

7. Towards efficient data normalization using grammar-based parsing  
Somnath Basu Roy Chowdhury, Aresh Mishra and Ayan Banerjee  
Proceedings of **Microsoft Journal of Applied Research (MSJAR)**, 2020. (*Internal*)
6. Instance-based Inductive Deep Transfer Learning by Cross-Dataset Querying with LSH  
Somnath Basu Roy Chowdhury, K.M. Annervaz and Ambedkar Dukkipati.  
Proceedings of **DeepLo Workshop, EMNLP 2019**. [[pdf](#)]
5. Learning beyond datasets: Knowledge Graph Augmented neural networks for NLP  
K.M. Annervaz\*, Somnath Basu Roy Chowdhury\* and Ambedkar Dukkipati.  
Proceeding of **NAACL 2018**. (Long, Oral) [[pdf](#)]
4. AdGAP: Advanced Global Average Pooling  
Arna Ghosh, Biswarup Bhattacharya\* and Somnath Basu Roy Chowdhury\*  
Proceedings of **AAAI 2018**. (Student Abstract) [[pdf](#)]
3. Training Autoencoders in Sparse Domain  
Biswarup Bhattacharya, Arna Ghosh\* and Somnath Basu Roy Chowdhury\*  
Proceedings of **AAAI 2018**. (Student Abstract) [[pdf](#)]
2. Handwriting Profiling using Generative Adversarial Networks  
Arna Ghosh\*, Biswarup Bhattacharya\* and Somnath Basu Roy Chowdhury\*  
Proceedings of **AAAI 2017**. (Student Abstract) [[pdf](#)]
1. SAD-GAN: Synthetic Autonomous Driving using Generative Adversarial Networks  
Arna Ghosh\*, Biswarup Bhattacharya\* and Somnath Basu Roy Chowdhury\*  
Proceedings of **DLAI Workshop, NIPS 2016**. [[pdf](#)]

(\* = equal contribution)

## Theses:

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

## Research and Work Experience

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**UNC Chapel Hill**, Computer Science Dept. (2021 - *present*)  
Graduate Research Assistant, [UNC-NLP](#)  
Advisor: Prof. [Snigdha Chaturvedi](#)

**Microsoft Corporation** (July 2019 - Dec 2020)  
Data Scientist II, Semi-Structured Information Retrieval team (Bing)

- Developed a context-free grammar framework leveraging *Earley parsing* and improved it to handle right-recursive scenarios enhancing down-stream schema-matching performance by  $\sim 400 - 1200\%$
- Part of the team to setup a *semi-structured knowledge graph* from scratch and shipped 100M+ entity panes on Bing from unstructured data. Leveraged *entropy-based signals* from user-queries to perform *conflation* and ship over 200K entity panes for people segment

**Apple Inc.** (June 2018 - July 2019)  
Software Engineer, Apple Security Engineering  
Complex event processing for access management.

**Accenture Technologies Lab (ATL)** (Summer 2017)  
Research Intern, Topic: Knowledge graph enhanced NLP  
Advisor: [K. M. Annervaz](#) (ATL), Prof. [Ambedkar Dukkipati](#), (IISc)

**Statistics and Machine Learning Group, IISc** (May 2017 - April 2018)  
Research Intern, Topic: Low Resource NLP  
Advisor: Prof. [Ambedkar Dukkipati](#)

**Visual Information Processing Lab - IIT Kharagpur** (2016 - 2018)  
Undergraduate Researcher, Topic: Lung Cancer Segmentation in 3D CBCT  
Advisor: Prof. [Jayanta Mukhopadhyay](#)

**National Brain Research Centre - Gurgaon, India** (Summer 2015)  
IAS Summer Fellow, Topic: Image Processing in MRI scans  
Advisor: Prof. [Pravat Mandal](#)

## Professional Service/ Teaching

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- **Program Committee Member/ Reviewer**  
3<sup>rd</sup> workshop on Narrative Understanding Workshop, ACL-IJCNLP 2021 2021
- *Teaching Assistant* (EE21101)  
Signals and Networks Lab, IIT Kharagpur 2018
- *Teaching Assistant* (EE19001)  
Electrical Technology Lab, IIT Kharagpur 2017

## Talks

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- ‘Probabilistically grounded word embeddings’, Bing paper reading forum, *Microsoft* (Nov 2019)  
‘Secure Machine Learning’, *Apple India Research Forum* (April 2019)

## Academic Achievements

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- *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
- *Department Change*, IIT Kharagpur - Rank 3/52 department students 2014
- *INSPIRE Scholarship* - Top 1 percentile in ISC (Grade 12). 2013
- *Top ranks* - JEE (Mains, Advanced): 99.9+ percentile, Top 1% in ISCE & ISC 2013

## Miscellaneous Activities

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