Soham De

Curriculum Vitae

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Education

Ashoka University   *Sonepat, India*

DipASR (Ashoka Scholars Program) in Computer Science   *Aug 2022 - May 2023 (exp)*

- Completing an Advanced Major in Computer Science (Undergraduate Thesis)

BSc (Hons) in Computer Science | 3.89/4.0   *Aug 2019 - May 2022*

- Graduated Magna cum Laude with a Gold Medal in Computer Science

Delhi Public School, Ruby Park   *Kolkata, India*

High School Diploma | 95%   *Aug 2017 - May 2019*

- Graduated in 2019 (AISSCE)

Work Experience

Microsoft Research   *Bangalore, India*

Research Intern   *Jul. 2022 - Dec. 2022*

- Studying quantitative characteristics of propaganda networks in real-life social networks
- Used a mix of statistical analysis and qualitative interviews to study disinformation and effectiveness of fact-checks

University of Michigan   *Remote*

Research Intern   *Dec. 2021 - Jun. 2022*

- Analysing nature of interactions, polarization, and discourse among political influencers on Indian Twitter
- Actively using word embeddings, PCA, LDA, regression, clustering, and tools like Gephi in research

Pint AI (formerly Mediacred)   *Bangalore, India*

ML Research Intern   *May. 2021 - Oct. 2021*

- Conducted exploratory research into ML interventions for fake-news detection
- Worked on Credibly - Mediacred's flagship news credibility analyser
- Implemented a novel Twitter-based article recommendation engine that generates a curated news feed in $\mathcal{O}(1)$ time

MPhasis Lab (ML2CT)   *Sonepat, India*

Research Intern   *May. 2021 - Aug. 2021*

- Implemented end-to-end PPML systems in C++ and Python on multiple large datasets
- Designed a novel algorithm for securely evaluating non-linear functions using arithmetic shares

Ashoka University   *Sonepat, India*

2x Undergraduate Teaching Assistant   *Fall 2020, Fall 2021*

- TA for FC-0309 (Foundations of Computer Programming) and CS-1216 (Computer Organisation and Systems)
- Conducted weekly discussion sections and office hours. Was responsible for designing and evaluating assignments as well as conducting the Puzzle Day event
- Student feedback: 4.75/5.0 (180+ enrolled students)

Research Experience

In Progress/ In Submission

[9] Towards defining and quantifying Twitter formality

Soham De, Anirban Sen, Monojit Choudhury, Joyojeet Pal, Debayan Gupta   *In Progress*

- Conducting a global survey to arrive at a definition of perceived formality of text on Twitter
- Using various linguistic features and state-of-the-art language models to quantify formality and study it's applications in corporate communication, propaganda and discourse

[8] The Troll's Toolkit: A mixed-methods study on how journalists are trolled on Twitter

Soham De*, Sukhnidh Kaur*, Joyojeet Pal   *under revision*

- Studied trolling of journalists on Twitter using large-scale analysis of their tweets and responses received on them along with quantitative interviews of 20+ highly-visible journalists in India

[7] Trends in Online Propaganda: A Comparative Study

Anirban Sen, **Soham De**, Joyojeet Pal   *in submission*

- Compared quantitative features of 3 different socio-political events of varying levels of propagandist content on Indian Twitter

[6] Hierarchical Association, Harmonized Aggravation, and Hashtag Assemblies: A Dogma Community keeping its Twitter Candle Lit

Anirban Sen, **Soham De**, Joyojeet Pal   *in submission*

- Studied methods of sustaining discourse around rumors and conspiracy theories on social media
- Quantitatively explored formations of de-facto hierarchies within such communities

[5] Catch, Corroborate and Communicate: The Contours of Professional fact-Checking In India

Arshia Aarya, **Soham De**, Saloni Dash, Joyojeet Pal   *under revision*

- Studied mechanisms of professional fact-checking and the effectiveness of online dissemination using network analysis and qualitative interviews of prominent fact-checkers

Conference Publications & Posters

[4] Experiences of Indian Journalists on Twitter in India *(Best Poster Award)*   *ACM SIGCHI HCI & Friends 2022*

Soham De*, Sukhnidh Kaur*, Joyojeet Pal   *[Link to poster]*

- Poster on qualitative experiences of journalists online - including a description of troll networks, mechanisms of trolling and reactions of journalists to cope with such attacks

[3] Closed Ranks: The Discursive Value of Military Support for Indian Politicians on Social Media   *ICTD 2022*

Agrima Seth*, **Soham De***, Arshia Arya, Sushant Singh, Steven Wilkinson, Joyojeet Pal   *[Link to pdf]*

- Studied institutional capture of defense accounts by politicians and the nature of their interactions using network analysis

[2] Note: Picking Sides: The #HijabBan discourse on Twitter   *ACM COMPASS 2022*

Soham De, Anmol Panda, Joyojeet Pal   *[Link to pdf]*

- Short paper on narratives and themes in the #HijabBan debate on Twitter using multilingual word embeddings and unsupervised hierarchical clustering

[1] DISMISS: Database of Indian Social Media Influencers on Twitter   *AAAI ICWSM 2022*

Arshia Arya*, **Soham De***, Dibyendu Mishra*, Gazal Shekhawat*, Ankur Sharma, Anmol Panda, Faisal Lalani,
Parantak Singh, Ramaravind Kommiya Mothilal, Rynaa Grover, Sachita Nishal, Saloni Dash, Shehla Shora, Syeda   *[Link to pdf]*
Zainab Akbar, Joyojeet Pal

- DISMISS is the largest sample of social media influencers on Twitter, curated using snowball sampling in conjunction with various robustness checks

Media Articles

[M2] Who are BJP's favorite journalists? What about Congress and AAP? A Michigan study reveals   *Newslaundry*

Soham De, Joyojeet Pal   *Nov 2022*

[M1] Coordinated campaign? India #1 source for pro-Russia tweets amid Ukraine war, says Ashoka study   *The Print & The FinePrint*

Regina Mihindukulasuriya, **Soham De** (CANDID)   *May 2022*

Miscellaneous/ Prior Research

Privacy Preserving Machine Learning   *ML2CT*

Soham De*, Kuber Shahi*, Subhashis Banerjee, Mahavir Jhawar   *May. 2021 - Aug. 2021*

- Implemented various PPML frameworks (such as SecureML and BLAZE) from scratch in C++
- Designed and implemented a novel protocol for securely evaluating non-linear activation functions (such as the sigmoid) using arithmetic circuits in a constant field-size

Alternative Approaches for Modelling COVID-19: High-Accuracy Low-Data Predictions   *medRxiv*

Dewang Kumar Agarwal*, **Soham De***, Ojas Shukla, Archit Checker, Apoorvi Mittal, Ankita Borah, Debayan Gupta   *Jul. 2020*

- Analysed COVID-19 data using novel curve-fitting and ML-based techniques to make low data-reliant predictions in R and Python

BHARATSIM *Thoughtworks*

Adit Shah*, **Soham De***, Gautam Menon, Debayan Gupta *Jun. 2020*
- Implemented ETL pipelines and synthetically replicated the Indian population using GANs
- Also added polygon-based querying on the synthetic population in $\mathcal{O}(n\log n)$ by optimising function calls for the visualisation engine

* means equal contribution

HONORS & AWARDS

2022 **Gold Medallist**, Department of Computer Science, Ashoka University
2022 **Undergraduate Research Excellence Award**, Department of Computer Science, Ashoka University
2022 **Service Excellence Award**, Department of Computer Science, Ashoka University
2022 **Recognition for Outstanding Contribution**, Department of Computer Science, Ashoka University
2019-22 **Dean's List (every semester)**, Dean of Academic Affairs, Ashoka University
2017 **National Finalist**, ICPC for Schools
2017 **All India Rank 7**, ICSE Board Exams

OTHER ACTIVITIES

Social Media and Society Conference 2023 *University of Michigan*
STUDENT ORGANISER *Apr. 2023*
• Organising the call for papers, poster presentation session, and guest invites for an upcoming conference

ACM CSCW 2022 *Virtual*
STUDENT VOLUNTEER AND REVIEWER *Nov. 2022*
• Reviewed manuscripts and currently volunteering for the virtual CSCW conference on Nov 8-12, 2022

The CrossThink Journal *Ashoka University*
GENERAL CHAIR *Aug. 2022 - present*
• Started Ashoka's first (and only) interdisciplinary CS Journal with a team of 12 student reviewers

CANDID Research Group *Ashoka University*
FOUNDER AND STAFF RESEARCHER *Apr. 2022 - present*
• Started and helped secure funding for a new CS research group at Ashoka for Analysis on Social Networks

Academic Affairs Board *Ashoka University*
CS REPRESENTATIVE *Fall 2021, Spring 2021*
• Worked with the Department of Computer Science, Ministry of Academic Affairs (SG) and the Academic Advisory Board

The CS Society *Ashoka University*
INTERIM PRESIDENT, HEAD OF DEVELOPMENT *Feb. 2020 - Jun. 2022*
• Conducted bi-weekly Workshops and Events for 70+ active members on Development and Machine Learning

WiCS Research Reading Group *Ashoka University*
MEMBER, PRESENTER *Aug. 2020 - Jun. 2022*
• Presented multiple ML papers (from NIPS, ICLR, PRML etc) to senior undergraduate and Ph.D. Students at Ashoka University

SKILLS

Programming Python, C/C++, JavaScript, LaTeX, R, Markdown, Assembly, SQL
Frameworks React, Express, Flask, git, Keras, Tensorflow, OpenCV
Softwares Gephi, NetworkX, Tableau, Atlas.ti, MS Excel
Languages English, Bengali, Hindi

REFERENCES

Joyojeet Pal JOYOJEET@UMICH.EDU Advisor and collaborator on multiple studies
Debayan Gupta DEBAYAN.GUPTA@ASHOKA.EDU.IN Capstone project/thesis advisor at Ashoka University
Anirban Sen T-ANIRBANSEN@MICROSOFT.COM Advisor and collaborator at Microsoft Research, India
Mahavir Jhawar MAHAVIR.JHAWAR@ASHOKA.EDU.IN Research advisor at ML2CT, Ashoka University