

Hridoy Sankar Dutta

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LINKS

Website: <https://hridaydutta123.github.io>
Github: <https://github.com/hridaydutta123>
DBLP: <https://tinyurl.com/hsd-dblp>
Google Scholar: <https://tinyurl.com/hsd-google-scholar>
LinkedIn: <https://tinyurl.com/hsd-linkedin>

WORK EXPERIENCE

Research Associate June 2021 - Present
*Department of Computer Science and Technology & Cambridge Cybercrime Centre
University of Cambridge*

Research Assistant February 2021 - June 2021
*Department of Computer Science and Technology & Cambridge Cybercrime Centre
University of Cambridge*

Assistant Project Engineer August 2014 - April 2015
IIT Guwahati Project Title: *Developing Text to Speech System in Assamese Language Phase II*
Supervisor: Prof. S.R.M.Prasanna, Professor, Dept. of EEE, Indian Institute of Technology, Guwahati (IITG)

EDUCATION

PhD in Computer Science and Engineering July 2017 - September 2021
Indraprastha Institute of Information Technology Delhi (IIIT-D)

- Thesis Title: *Detecting and reasoning collusive activities in online media*
- Supervisor: **Dr. Tanmoy Chakraborty**, Assistant Professor & Ramanujan Fellow, Dept. of CSE, Indraprastha Institute of Information Technology Delhi (IIIT-D), India

M.Tech in Computer Science and Engineering 2015 - 2017
National Institute of Technology Durgapur, West Bengal, India

- Thesis Title: *An offline crisis mapping system for large-scale natural disasters*
- Supervisor: **Prof. Subrata Nandi**, Professor, Dept. of CSE, NIT Durgapur and **Dr. Sujoy Saha**, Assistant Professor, Dept. of CSE, NIT Durgapur
- CGPA of **9.15/10** (Ranked 3rd)

B.Tech in Computer Science and Engineering 2009 - 2013
Institute of Science and Technology, Gauhati University, Assam, India

- Thesis Title: *Hierarchical Convergecasting with clustering and spanning tree generation*
- Supervisor: **Dr. Sushanta Karmakar**, Associate Professor, Dept. of CSE, Indian Institute of Technology Guwahati (IIT-G)
- Mentor: **Dr. Sandip Chakraborty**, Associate Professor, Dept. of CSE, Indian Institute of Technology Kharagpur (IIT-KGP)
- CGPA of **9.17/10**

PATENT

- Sujoy Saha, Prithviraj Pramanik, Partha Sarathi Paul, Subrata Nandi, Kingshuk De, Bishak Chandra Ghosh, **Hridoy Sankar Dutta**, Tamal Mondal, Krishnendu Hazra, Indrajit Bhattacharya, Sandip Chakraborty, AN END-TO-END SYSTEM FOR OFFLINE LOCALIZED CRISIS MAPPING AND METHOD OF OPERATION THEREOF, Indian Patent, Application No: 201931050685, Filed on 09 December, 2019.

PAPERS UNDER * - Equal contribution

- RE-
VIEW/WORKING PAPERS
- Luis Adán Saavedra del Toro*, **Hridoy Sankar Dutta***, Alastair Beresford and Alice Hutchings. Mod-view/Zoo: A Large-Scale Study of Modded Android Apps and their Markets.
 - Luis Adán Saavedra del Toro*, **Hridoy Sankar Dutta***, Alastair Beresford and Alice Hutchings. Surveying Android and iOS Modded App Market Operators and Developers.
 - Luis Adán Saavedra del Toro*, **Hridoy Sankar Dutta***, Alastair Beresford and Alice Hutchings. Unveiling the Wild Side of Apps: Exploring the Modded iOS Market Ecosystem.
 - **Hridoy Sankar Dutta**, Yanna Papadodimitraki and Alice Hutchings. A needle in a haystack: A First Look into Marketplaces selling multi-platform Online Media Accounts.
 - Anahit Sargsyan, **Hridoy Sankar Dutta** and Juergen Pfeffer. Half-Life of YouTube Videos: A Comparative Analysis of Alternative and Mainstream News Channels in the US.

ACCEPTED /
PUBLISHED PAPERS

([Top conferences and high impact journals are highlighted in blue.](#))
* - Equal contribution

- Quincy Taylor, Derek Hansen, **Hridoy Sankar Dutta** and Justin Giboney. Analyzing online media platforms for hacktivist group organization and proliferation, *The 15th Dewald Roode Workshop on Information Systems Security Research (DRW 2023)* 22-23 June 2023, Glasgow, Scotland.
- Luis Adán Saavedra del Toro, Alastair Beresford, **Hridoy Sankar Dutta** and Alice Hutchings. Analysis of Modded Android Apps and Marketplaces, *Fourth UK Mobile, Wearable and Ubiquitous Systems Research Symposium (MobiUK)* 4th-5th July 2022, UCL.
- **Hridoy Sankar Dutta** and Tanmoy Chakraborty, Blackmarket-driven collusion on online media: a survey. *ACM/IMS Transactions on Data Science (TDS)* 2, no. 4 (2022): 1-37.
- **Hridoy Sankar Dutta**, Nirav Diwan, Tanmoy Chakraborty. Weakening the Inner Strength: Spotting Core Collusive Users in YouTube Blackmarket Network, *16th International AAAI Conference on Web and Social Media (ICWSM)*. Atlanta, GA, USA, June 6-9, 2022.
- **Hridoy Sankar Dutta**, Mayank Jobanputra, Himani Negi, Tanmoy Chakraborty. Detecting and Analyzing Collusive Entities on YouTube, *ACM Transactions on Intelligent Systems and Technology (TIST)*. (Impact Factor: 3.971)
- **Hridoy Sankar Dutta**, Kartik Aggarwal and Tanmoy Chakraborty. DECIFE: Detecting Collusive Users Involved in Blackmarket Following Services on Twitter, *32nd ACM Conference on Hypertext and Social Media (HyperText)*, Trinity College Dublin, Ireland, 30 August – 2 September 2021.
- **Hridoy Sankar Dutta**, Udit Arora and Tanmoy Chakraborty. ABOME: A Multi-platform Data Repository of Artificially Boosted Online Media Entities, *15th International AAAI Conference on Web and Social Media (ICWSM)*, Atlanta, GA, USA, June 7-10, 2021.
- **Hridoy Sankar Dutta** and Tanmoy Chakraborty. Adversarial Collusion on the Web: State-of-the-Art and Future Directions. In *Big Data Analytics: 8th International Conference, BDA 2020*, Sonapat, India, December 15–18, 2020, Proceedings 8, pp. 230-235. Springer International Publishing, 2020.
- Udit Arora*, **Hridoy Sankar Dutta***, Brihi Joshi, Aditya Chetan and Tanmoy Chakraborty. Analyzing and detecting collusive users involved in blackmarket retweeting activities. *ACM Transactions on Intelligent Systems and Technology (TIST)* 11, no. 3 (2020): 1-24.
- **Hridoy Sankar Dutta**, Vishal Raj Dutta, Aditya Adhikary and Tanmoy Chakraborty. HawkesEye: Detecting fake retweeters using Hawkes process and topic modeling. *IEEE Transactions on Information Forensics and Security* 15 (2020): 2667-2678.)
- **Hridoy Sankar Dutta** and Tanmoy Chakraborty. Blackmarket-driven Collusion among Retweeters – Analysis, Detection and Characterization. *IEEE Transactions on Information Forensics and Security (TIFS)*. (Impact Factor: 6.211)
- Partha Sarathi Paul, Bishakh Chandra Ghosh, **Hridoy Sankar Dutta**, Kingshuk De, Arka Prava Basu, Prithviraj Pramanik, Sujoy Saha, Sandip Chakraborty, Niloy Ganguly, Subrata Nandi. CRIMP: Here Crisis Mapping Goes Offline. *Elsevier Journal of Network and Computer Applications (JNCA)*. (Impact Factor: 5.273)
- Aditya Chetan*, Brihi Joshi*, **Hridoy Sankar Dutta***, Tanmoy Chakraborty. CoReRank: Ranking to Detect Users Involved in Blackmarket-based Collusive Retweeting Activities. *12th ACM International Conference on Web Search and Data Mining (WSDM)*, Melbourne, Australia, Feb 11-15, 2019. (Acceptance rate: 16%)

- **Hridoy Sankar Dutta**, Aditya Chetan, Brihi Joshi, Tanmoy Chakraborty. Retweet Us, We Will Retweet You: Spotting Collusive Retweeters Involved in Blackmarket Services, *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, Barcelona, Spain, Aug 28-31, 2018. (Acceptance rate: 15%)
- Partha Sarathi Paul, **Hridoy Sankar Dutta**, Bishakh Chandra Ghosh, Krishnandu Hazra, Sandip Chakraborty, Sujoy Saha, Subrata Nandi. Offline crisis mapping by opportunistic dissemination of crisis data after large-scale disasters, *2nd ACM SIGSPATIAL International Workshop on the Use of GIS in Emergency Management*, California, United States, Oct 31-Nov 3, 2016.
- Sandip Chakraborty, Suchetana Chakraborty, Sushanta Karmakar, **Hridoy Sankar Dutta**. Hierarchical topology adaptation for distributed convergecast applications, In *29th Annual ACM Symposium on Applied Computing*, Gyeongju, Korea, March 24-28, 2014.

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|-----------------------|---|--------------------------------------|
| TEACHING | Course Supervisor and Demonstrator, The University of Cambridge <i>Machine Learning and Real-world Data</i> | Jan - Mar 2023 |
| | Supervisor <i>Pembroke Cambridge Summer Programme</i> | July - Aug 2022 |
| | Course Demonstrator, The University of Cambridge <i>Machine Learning and Real-world Data</i> | Jan - Mar 2022 |
| | Course Supervisor, The University of Cambridge <i>Security</i> | May - June 2021 |
| | Teaching Assistant, IIIT Delhi <i>Information Retrieval</i> <i>System Management</i> | Jan - June 2020 August - Nov 2017 |
| | Teaching Assistant, NIT Durgapur <i>Network and Distributed System Laboratory</i> <i>Software Engineering Laboratory</i> | Jan - June 2017 July - Nov 2016 |
| THESIS SUPERVISION | Brigham Young University USA <i>Role: Honors Thesis Advisor</i> <i>Supervisee: Quincy Taylor</i> <i>Project Title: Analyzing Online Media Platforms for Hacktivist Group</i> <i>Organization and Proliferation</i> | January 2023 - March 2023 |
| | Ahmedabad University India <i>Role: Thesis Supervisor</i> <i>Supervisee: Parth Mitesh Shah</i> <i>Project Title: Developing Language-Agnostic thumbnail embeddings</i> <i>for YouTube videos</i> | January 2023 - April 2023 |
| OTHER EXPERIENCES | Co-founder, Assam AI Initiative (AII) <i>A non-profit initiative to promote various scopes of AI</i> | Feb 2021 - Present |
| | Visiting Researcher, TU Munich <i>Supervisor: Prof. Juergen Pfeffer</i> <i>Professor of Computational Social Science & Big Data, TU Munich</i> | July 2023 |
| | Visiting Researcher, Cardiff University <i>Supervisor: Prof. Pete Burnap</i> <i>Professor, School of Computer Science and Informatics, Cardiff University</i> | March 2019, March 2020 |
| | Short-Term Scholar, George Mason University <i>Supervisor: Dr. Hemant Purohit, Associate Professor, Information Sciences & Technology Department</i> | June 2019 - August 2019 |

George Mason University (GMU)

Student Researcher, ForkIT

Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur &

Dr. Sujoy Saha, Dept. of CSE, NIT Durgapur

May 2016 - June 2017

An end-to-end system to generate offline crisis maps

Summer Research Intern, DISARM Group, NIT Durgapur

Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur

May 2016 - July 2016

Developed web application admin dashboard for Master Control Station at the time of disaster. Django, a python web framework was used to develop the application.

Winter Research Intern, DISARM Group, NIT Durgapur

Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur

December 2015 - January 2016

Developed an opportunistic network for an android application.

Project Intern, IIT Guwahati

Mentored by Dr. Sushanta Karmakar, Dept. of CSE, IIT Guwahati

January 2013 - June 2013

Worked on the Research Topic "Hierarchical topology adaptation for distributed convergecast applications"

SELECTED
PROJECTS

All projects are available on git : <https://www.github.com/hridaydutta123>

- **ResourceFinder** - A resource map tool created during Covid-19 to locate nearby grocery shops, hospitals and gas stations with their opening time, closing time, phone number etc.
- **Assamese2Vec** - An open source project for modeling the Assamese language.
- **Awesome Twitter Tools** - A curated list of tools, datasets, research papers and browser extensions related to Twitter.
- **The YouTube Scraper** - Download YouTube video description and video comments without using the YouTube API.
- **Collusive User Detection Tool** - A tool for detection of collusive users in online social networks.
- **Opportunistic Network for Android Application** - Implementation of communication medium for challenge network scenario.
- **Offline Master Control Station** - Implementation of reliable and effective data transfer from opportunistic network and tool for analyzing behaviour of data captured in opportunistic networks.
- **Designing TTS System in Assamese and Manipuri Languages** - It involves building systems for synthesizing natural speech in native Assamese and Manipuri tone from a given text and building user friendly GUIs for the common people.
- **MapDisarm** - Offline efficient transfer of OSM Map tiles among various devices without internet connectivity for gps based recovery in Opportunistic network.

ACHIEVEMENTS
AND AWARDS

- Awarded DAAD AInet fellowship 2023.
- Affiliated Postdoctoral Member, Clare College, University of Cambridge.
- Member of Trinity College Postdoctoral Society, University of Cambridge.
- Awarded ICWSM 2022 Virtual scholarship.
- Awarded ICWSM 2021 scholarship for Underrepresented Groups Program.
- Selected as a Rising Star in Data Science by the Center for Data and Computing (CDAC), University of Chicago.
- Awarded 3rd prize at Ninth IDRBT Doctoral Colloquium IDC 2019.
- Awarded Student Travel Grant to attend CODS COMAD 2019.
- Grand Challenge Grade A winner at International Symposium on Embedded Devices (ISED) 2016 at IIT Patna.
- Came 1st Runners Up in Startup Weekend, Kolkata (5-7th August, 2016).
- Media Coverage of our Group in a local daily: <https://tinyurl.com/news-coverage-disarm>
- Won 3rd Prize in Coding Competition at Techniche 2012 (IIT Guwahati Technical Fest Coding Event).

- Attended NASSCOM Product Conclave-2016 as Student Researcher of ForkIT.
- Rank of 3 in Master of Technology and Rank of 7 in Bachelor of Technology.
- Secured 10/10 SGPA in M.Tech (3rd & 4th Semester).
- Secured 10/10 SGPA in B.Tech (6th, 7th & 8th Semester).
- GATE Qualified (2016) – Gate Score : 488 (Rank: 4370).
- GATE Qualified (2015) – Gate Score : 441 (Rank: 6675).
- Recipient of GATE Scholarship (2014) – Gate Score : 582 (Rank: 2139).
- Passed ‘A’ level examination of National Cadet Crops (NCC).

PROFESSIONAL SERVICES

- ACM International Conference on Web Search and Data Mining (WSDM 2024) (Reviewer)
- Nature Scientific Reports (Reviewer).
- Dewald Roode Workshop on Information Systems Security Research (DRW 2023) (Reviewer).
- Special Interest Group on Information Retrieval (SIGIR 2023 Resource Track) (Reviewer).
- Transactions on Asian and Low-Resource Language Information Processing (ACM TALLIP) (Reviewer).
- International Joint Conference on Artificial Intelligence (IJCAI 2023) (Reviewer).
- ACM Web Conference (WWW 2023) (Reviewer).
- SIAM International Conference on Data Mining (SIAM 2023) (Reviewer).
- Springer Machine Learning Journal (Reviewer).
- Cambridge Cybercrime Conference 2022 (Organizing committee)
- AAAI Conference on Artificial Intelligence (AAAI 2023) (Reviewer)
- ACM International Conference on Web Search and Data Mining (WSDM 2023) (Reviewer)
- International Conference on Neural Information Processing (ICONIP 2022) (Reviewer)
- ACM International Conference on Information and Knowledge Management (CIKM 2022 Short Paper) (Reviewer)
- Special Interest Group on Information Retrieval (SIGIR 2022 Resource Track) (Reviewer).
- Journal of Cybersecurity (Reviewer).
- IEEE Internet Computing (Reviewer).
- International Conference on Natural Language Processing (ICON-2021) (Reviewer).
- SIAM International Conference on Data Mining (SIAM 2022) (Reviewer).
- Springer Journal on Social Network Analysis and Mining (SNAM) (Reviewer).
- ACM International Conference on Information and Knowledge Management (CIKM 2021 Resource Track) (Reviewer).
- International Conference on Natural Language Processing (ICON-2020) (Reviewer)
- IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE ANTS 2020) (Reviewer)
- International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT 2020) (Reviewer)
- AAAI Workshop on Combating online Hostile Posts in Regional Languages during Emergency Situation (CONSTRAINT 2021) (Web Chair & Reviewer)
- SIAM International Conference on Data Mining (SIAM 2021) (Reviewer).
- ACM International Conference on Information and Knowledge Management (CIKM 2020) (Reviewer).
- PAKDD Workshop on Data Science for Fake News (DSFN 2020) (Web Chair & Reviewer).
- Wiley Journal on Expert Systems (Reviewer).
- IEEE/WIC/ACM International Conference on Web Intelligence (WI 2019) (External Reviewer).
- International Conference on Secure Knowledge Management in Artificial Intelligence Era (SKM 2019) (External Reviewer).

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|-----------------------------------|---|
| EVENTS & WORKSHOPS ATTENDED | <ul style="list-style-type: none"> • Hidden Populations Workshop, University of Oxford (2022). • Security and Human Behaviour (SHB), University of Cambridge (2021). • Workshop on AI for Computational Social Systems (ACSS-20), IIT Delhi (2021). • Workshop on Combating Fraud Activities using Data Science (CoFad), IIT Delhi (2020). • Amazon Research Days, Bangalore (2019). • Academic Research Summit 2019 on Data Science and AI, IIT Madras, Chennai (2019). • ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) (2019). • Workshop on AI for Computational Social Systems (ACSS-19), IIT Delhi (2019). • Winter School on Artificial Intelligence, IIT Delhi (2019). • Amazon Research Days, Bangalore (2018). • Young Scientist Conference at India International Science Festival (2018). • Workshop on Complex and Social Networks, IIT Kharagpur (2017). • NASSCOM Product Conclave, Bangalore (2016). |
| TECHNICAL SKILLS | <p>Strongest Areas - Cybercrime, Data-driven Cybersecurity, Social Network Analysis, Data Mining, Applied Machine Learning, Web Mining, Natural Language Processing & System Programming.</p> <p>Languages - Python, Java, PHP, Dart, C++, UNIX Shell, HTML, CSS, JS, Ajax, Perl</p> <p>Tools - Git, Android Studio, Adobe Photoshop, JUnit, L^AT_EX</p> <p>Databases - Firebase, MySQL, SQLite, MongoDB</p> |
| PERSONAL DETAILS | <p>Date of Birth: 12th September, 1991</p> <p>Gender: Male</p> <p>Nationality: Indian</p> |
| REFERENCES | |
| REFERENCES | <p>Dr. Tanmoy Chakraborty, Associate Professor, Dept. of Electrical Engineering, IIT Delhi</p> <p>Prof. Alice Hutchings, Professor, Dept. of CST, University of Cambridge</p> <p>Prof. Ross Anderson, Professor, Dept. of CST, University of Cambridge</p> |