

# 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>

## JOB EXPERIENCE

**Research Associate, University of Cambridge** September 2021 - Present  
*Cambridge Cybercrime Centre*  
*University of Cambridge*

**Research Assistant, University of Cambridge** February 2021 - September 2021  
*Cambridge Cybercrime Centre*  
*University of Cambridge*

**Short-Term Scholar, George Mason University** June 2019 - August 2019  
*Supervisor: Dr. Hemant Purohit, Associate Professor, Information Sciences & Technology Department*  
*George Mason University (GMU)*

**Assistant Project Engineer, IIT Guwahati** August 2014 - April 2015  
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** August 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  
REVIEW

- **Hridoy Sankar Dutta** and Tanmoy Chakraborty. Collusion on the web: A Survey., *ACM/IMS Transactions on Data Science*. (Major Revision)
- **Hridoy Sankar Dutta**, Nirav Diwan, Tanmoy Chakraborty. Weakening the Inner Strength: Spotting Core Collusive Users in YouTube Blackmarket Network, *15th International AAAI Conference on Web and Social Media (ICWSM)*. (Rebuttal phase)

ACCEPTED /  
PUBLISHED  
PAPERS

(Type-A/A\* conferences based on CORE ranking and high impact journals are highlighted in blue.)

\* - Equal contribution

- **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.
- Shreyash Arya and **Hridoy Sankar Dutta**. Revealing the Blackmarket Retweet Game: A Hybrid Approach, *AAAI Workshop on Combating Online Hostile Posts in Regional Languages during Emergency Situation (CONSTRAINT)*, Feb 8, 2021.
- **Hridoy Sankar Dutta** and Tanmoy Chakraborty. Adversarial Collusion on the Web: State-of-the-art and Future Directions, *The 8th International Conference on Big Data Analytics (BDA)*. (Tutorial)
- Udit Arora\*, **Hridoy Sankar Dutta\***, Brihi Joshi, Aditya Chetan, Tanmoy Chakraborty. Analyzing and Detecting Collusive Users Involved in Blackmarket Retweeting Activities, *ACM Transactions on Intelligent Systems and Technology (TIST)*. (Impact Factor: 3.971)
- **Hridoy Sankar Dutta**, Vishal Raj Dutta, Aditya Adhikary, Tanmoy Chakraborty. HawkesEye: Detecting Fake Retweeters using Hawkes Process and Topic Modeling, *IEEE Trans. Information Forensics and Security (TIFS)*. (Impact Factor: 6.211)
- **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.

TEACHING	<b>Courses Supervisor, The University of Cambridge</b> <i>Security</i>	May - June 2021
	<b>Teaching Assistant, IIIT Delhi</b> <i>Information Retrieval</i> <i>System Management</i>	Jan - June 2020 August - Nov 2017
	<b>Teaching Assistant, NIT Durgapur</b> <i>Network and Distributed System Laboratory</i> <i>Software Engineering Laboratory</i>	Jan - June 2017 July - Nov 2016
OTHER EXPERIENCES	<b>Visiting Researcher, Cardiff University</b> <i>Supervisor: Prof. Pete Burnap</i> <i>Professor, School of Computer Science and Informatics, Cardiff University</i>	March 2019, March 2020
	<b>Student Researcher, ForkIT</b> <i>Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur &amp;</i> <i>Dr. Sujoy Saha, Dept. of CSE, NIT Durgapur</i> An end-to-end system to generate offline crisis maps	May 2016 - June 2017
	<b>Summer Research Intern, DISARM Group, NIT Durgapur</b> <i>Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur</i> 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.	May 2016 - July 2016
	<b>Winter Research Intern, DISARM Group, NIT Durgapur</b> <i>Supervisor: Prof. Subrata Nandi, Dept. of CSE, NIT Durgapur</i> Developed an opportunistic network for an android application.	December 2015 - January 2016
	<b>Project Intern, IIT Guwahati</b> <i>Mentored by Dr. Sushanta Karmakar, Dept. of CSE, IIT Guwahati</i> Worked on the Research Topic "Hierarchical topology adaptation for distributed convergecast applications"	January 2013 - June 2013
SELECTED PROJECTS	All projects are available on git : <a href="https://www.github.com/hridaydutta123">https://www.github.com/hridaydutta123</a>	
	<ul style="list-style-type: none"> <li>• <b>ResourceFinder</b> - 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.</li> <li>• <b>Assamese2Vec</b> - An open source project for modeling the Assamese language.</li> <li>• <b>Awesome Twitter Tools</b> - A curated list of tools, datasets, research papers and browser extensions related to Twitter.</li> <li>• <b>The YouTube Scraper</b> - Download YouTube video description and video comments without using the YouTube API.</li> <li>• <b>Collusive User Detection Tool</b> - A tool for detection of collusive users in online social networks.</li> <li>• <b>Opportunistic Network for Android Application</b> - Implementation of communication medium for challenge network scenario.</li> <li>• <b>Offline Master Control Station</b> - Implementation of reliable and effective data transfer from opportunistic network and tool for analyzing behaviour of data captured in opportunistic networks.</li> <li>• <b>Designing TTS System in Assamese and Manipuri Languages</b> - 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.</li> <li>• <b>MapDisarm</b> - Offline efficient transfer of OSM Map tiles among various devices without internet connectivity for gps based recovery in Opportunistic network.</li> </ul>	
ACHIEVEMENTS AND AWARDS	<ul style="list-style-type: none"> <li>• Awarded ICWSM 2021 Scholarship.</li> <li>• Selected in the Rising Stars in Data Science workshop to be organized by the Center for Data and Computing (CDAC), University of Chicago.</li> </ul>	

- Awarded 3rd prize for presenting my work at Ninth IDRBT Doctoral Colloquim 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

- IEEE Internet Computing (Reviewer).
- International Conference on Natural Language Processing (ICON-2021) (Reviewer).
- SDM 2022: 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)
- SDM 2021: 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).

EVENTS & WORKSHOPS ATTENDED	<ul style="list-style-type: none"> <li>• Security and Human Behaviour (SHB), University of Cambridge (2021).</li> <li>• Workshop on AI for Computational Social Systems (ACSS-20), IIIT Delhi (2021).</li> <li>• Workshop on Combating Fraud Activities using Data Science (CoFad), IIIT Delhi (2020).</li> <li>• Amazon Research Days, Bangalore (2019).</li> <li>• Academic Research Summit 2019 on Data Science and AI, IIT Madras, Chennai (2019).</li> <li>• ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD) (2019).</li> <li>• Workshop on AI for Computational Social Systems (ACSS-19), IIIT Delhi (2019).</li> <li>• Winter School on Artificial Intelligence, IIIT Delhi (2019).</li> <li>• Amazon Research Days, Bangalore (2018).</li> <li>• Young Scientist Conference at India International Science Festival (2018).</li> <li>• Workshop on Complex and Social Networks, IIT Kharagpur (2017).</li> <li>• NASSCOM Product Conclave, Bangalore (2016).</li> </ul>
TECHNICAL SKILLS	<p><b>Strongest Areas</b> - Social Network Analysis, Data Mining, Applied Machine Learning, Web Mining, Natural Language Processing &amp; System Programming, Web Technology.</p> <p><b>Languages</b> - Python, Java, PHP, Dart, C++, UNIX Shell, HTML, CSS, JS, Ajax, Perl</p> <p><b>Frameworks</b> - Twitter API Clients, NLTK, Sklearn, Gensim, Django, Flask, Flutter</p> <p><b>Tools</b> - Git, Android Studio, Adobe Photoshop, JUnit, <math>\text{\LaTeX}</math></p> <p><b>Databases</b> - Firebase, MySQL, SQLite, MongoDB</p>
PERSONAL DETAILS	<p><b>Date of Birth:</b> 12th September, 1991</p> <p><b>Gender:</b> Male</p> <p><b>Nationality:</b> Indian</p>
REFERENCES	<p><b>Dr. Tanmoy Chakraborty</b> &lt;tanmoy@iiitd.ac.in&gt;, Asst. Professor, Dept. of CSE, IIIT Delhi</p> <p><b>Dr. Sandip Chakraborty</b> &lt;sandipc@cse.iitkgp.ac.in&gt;, Assoc. Professor, Dept. of CSE, IIT Kharagpur</p> <p><b>Prof. Subrata Nandi</b> &lt;subrata.nandi@cse.nitdgp.ac.in&gt;, Professor, Dept. of CSE, NIT Durgapur</p> <p><b>Dr. Bibhash Sen</b> &lt;bibhash.sen@cse.nitdgp.ac.in&gt;, Assoc. Professor, Dept. of CSE, NIT Durgapur</p>