
Research Interests

Network science (methods and applications), social network analysis, computational social science and social computing, data science, statistical methods, complex systems

Education

- 2019-2022 **Master of Science in Computer Science, University of Colorado Boulder** GPA: 4.0/4.0
Key Courses: Network Analysis and Modeling, Statistical Methods and Applications I and II, Data Science Team, Probability for CS, Integer and Linear Programming, Interdisciplinary Research
- 2015-2019 **B.Tech in Computer Science and Engg., Heritage Institute of Technology, India** GPA: 9.36/10
Key Courses: Algorithms, Data Structures, Social Network Analysis, Advanced Probability and Statistics, Operations Research and Optimization, Discrete Mathematics, Number Theory and Algebraic Structures, Databases

Publications and Research

- 2020 - present **Upasana Dutta**, Bailey K. Fosdick, Aaron Clauset, “Sampling random graphs with specified degree sequences” [[Preprint](#)] [[Code](#)]
Designed a method that detects convergence in a double-edge swap Markov chain sampler and generates uniform random graphs from the degree-preserving configuration model.
- 2020 - present **Upasana Dutta**, Laurent Hébert-Dufresne, Eleanor A. Power, Daniel B. Larremore, “Ordered Community Detection in Directed Networks” [In preparation] [[Code](#)]
Developed an algorithm that identifies ordered communities in directed networks, based on the density of edges between communities.
- 2019 - 2020 **Upasana Dutta***, Rhett Hanscom*, Jason Zhang, Richard Han, Tamara Lehman, Qin Lv, Shivakant Mishra, “Analyzing Twitter Users’ Behaviour Before and After Contact by Russia’s Internet Research Agency” [[Paper](#)] [[Code](#)] [[CPR News](#)] [[CU Boulder Today](#)]
In Proceedings of the ACM on Human-Computer Interaction, CSCW. PACM-HCI 2021
Analysed changes in user behaviour on Twitter after they engaged with bots employed by the Russian-backed Internet Research Agency (IRA) during the US 2016 presidential election.
(*equal contribution)

Talks

- Nov’ 2021 **The Mitchell Centre for Social Network Analysis, University of Manchester** “Sampling random graphs with specified degree sequences” [[Slides](#)] [[Talk](#)]
- July 2021 **A Joint Sunbelt and NetSci Conference (Networks 2021)** “Convergence criteria for sampling random graphs with specified degree sequences” [[Abstract](#)] [[Slides](#)] [[Talk](#)]
- May 2021 **International Conference on Complex Networks (CompleNet 2021)** “Convergence criteria for sampling random graphs with specified degree sequences” [[Abstract](#)] [[Slides](#)] [[Talk](#)]
- Mar’ 2021 **CU STEMinar Series Spring 2021, University of Colorado Boulder** “Analyzing Twitter Users’ Behaviour Before and After Contact by Russia’s Internet Research Agency” [[Slides](#)]
- Dec’ 2020 **Democracy and Technology Workshop Series, University of Colorado Boulder** “Analyzing Twitter Users’ Behaviour Before and After Contact by Russia’s Internet Research Agency” [[Slides](#)] [[Talk](#)]

Professional Activities

- Spring 2022 **Google CS Research Mentorship Program 2022**
- July 2021 **Complexity Interactive 2021** Santa Fe Institute [[Slides](#)] [[Presentation](#)]
- Jan’ 2021 **Complex Networks Winter Workshop 2021** University of Vermont and Université Laval [[Slides](#)]
- May 2020 **Network Epidemiology Workshop Series 2020** University of Maryland and University of Vermont [[Slides](#)] [[Presentation](#)]

Awards

- Apr' 2022 **Abel Lukens Stout Fellowship**, Department of Computer and Information Science, UPenn
- Apr' 2022 **Bell Foundation Outstanding Research Award**, Department of Computer Science, CU Boulder
- Mar' 2022 **CS Annual Research Expo Award**, Department of Computer Science, CU Boulder [[Poster](#)]
- Dec' 2021 **Collegiate Award 2022 Finalist**, National Center for Women and Information Technology [[Video](#)]
- Mar' 2021 **CS Annual Research Expo Award**, Department of Computer Science, CU Boulder [[Poster](#)]
- Feb' 2021 **CS Publication Recognition Award**, Department of Computer Science, CU Boulder [[Publication](#)]
- June 2020 **NetSci 2020 Conference Registration Waiver**
- Jan' 2019 **Student Travel Grant**, The ACM India Joint International CoDS-COMAD 2019

Technical Projects

- Spring 2021 **Underrepresentation of rural undergraduate students in CU Boulder** [[Slides](#)] [[Report](#)] [[Presentation](#)]
Worked with CU Boulder Office of Data Analytics and CU Rural Network to analyse how undergraduate students from rural communities and small towns are underrepresented in CU Boulder.
- Spring 2020 **Comparison of Dynamic and Linear Programming using Weighted Job Scheduling Problem** [[Slides](#)] [[Presentation](#)]
Compared Dynamic Programming and Linear Programming in solving the Weighted Job scheduling problem with increasing jobs and increasing difficulty of the problem.
- Fall 2019 **Study of user activity on Question-Answering Platform : Stack Exchange** [[Slides](#)] [[Report](#)]
Leveraged question-answer activities of users on Stack Exchange platform to study the latent community structure between various Q&A websites using Stochastic Block Modeling.
- Fall 2019 **Movie Recommendation System : Kaggle Dataset** [[Report](#)]
Utilised user demographics and film-viewing preferences to build a model that recommends new movies to users.

Work Experience

- Fall 2021 Graduate Student Staff for CSCI 5352 - Network Analysis and Modeling, CU Boulder
- Spring 2020 Graduate Student Staff for CSCI 3352 - Biological Networks, CU Boulder
- Fall 2019 Graduate Student Staff for CSCI 2824 - Discrete Structures, CU Boulder
- Aug' 2018 Internship at IBM India Private Limited, Kolkata, India
- Spring 2018 Instructor for Python, Python Hobby Group, ACM Student Chapter, Heritage Inst. of Tech., India
- 2017 - 2018 Vice Chair, ACM Student Chapter, Heritage Inst. of Tech., India

Extracurricular Activities

- 2020-present Chair, International Workers Committee, United Campus Workers Colorado [[Press](#)]
- Fall 2021 International Student Advisory Board Member, College of Engg. & Applied Science, CU Boulder
- Spring 2021 Graduate Student Advisory Board Member, College of Engg. & Applied Science, CU Boulder
- Spring 2021 Center of Student Involvement Board Member, Division of Student Affairs, CU Boulder
- Spring 2020 On-campus Housing Liaison, Graduate and Professional Student Government, CU Boulder
- 2004 - 2013 Completed nine years of training in Indian Classical Music and Tagore Songs, India