

# Anisha Mazumder

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## SUMMARY

PhD in Computer Science currently working in Microsoft as an Applied Machine Learning Engineer in Azure Security

## EDUCATION

### PhD program, Computer Science

Ira A. Fulton Schools of Engineering, Arizona State University, USA

2012-2016

GPA 4.0 /4.0

### Bachelor of Engineering, Computer Science and Engineering

Department of Computer Science and Engineering, Jadavpur University, Kolkata, India

2008-2012

GPA 8.86/10.0

## WORK EXPERIENCE

- ✓ **Applied Machine Learning Engineer in Microsoft, Jan 2017-present:** Working in the Azure Security team. Working on building end-to-end machine learning solutions for detecting attacks on customers of Azure. The detection scenarios include suspicious logins into Azure, malicious accesses of resources in Azure, unusual behaviors in usage of Azure. Working on application of cutting-edge machine learning techniques including applications of deep learning and graph analytics. Working on big data systems in cloud scale. My work directly faces millions of customers of Microsoft. Been promoted twice in less than two years. Azure Security is one of the most thriving divisions in Azure and the leader in cloud security.
- ✓ **Intern at Intel Inc. Apr-Aug, 2016:** Worked in the Physical Design Integration Team. The software team provided central Computer-Aided Design (CAD) tools, design flows and methodology (TFM) support to global Intel design community in the physical integration domain covering optimized synthesis, place & route with emphasis on hierarchical design planning and convergence.
- ✓ **R & D Intern at Synopsys Inc. May-Nov, 2015:** Worked on runtime performance improvement of Synopsys's preeminent product Design Compiler (DC) which is a software used for automatized and optimized circuit design implementation.
  - Problem: Power optimization engine of DC had runtime issues causing total runtime of design synthesis by DC to explode in some cases.
  - Solution: Developed and implemented optimized graph algorithms to expedite critical steps of power optimization engine of DC.
  - Impact: In those cases, runtime of power optimization was improved by 60%-70% and total runtime of DC was improved by 30%-40% without impacting overall quality of result. Besides, better analysis and emulation of power of physical circuits resulted.

## RESEARCH EXPERIENCE

Research Assistant at Arizona State University, Advisor: Prof. Arunabha Sen

Aug 2012-2016

- ✓ **PhD Dissertation: "Optimal Resource Allocation in Social and Critical Infrastructure Networks":** We live in a networked world with a multitude of networks, such as communication networks, electric power grid, transportation networks and water distribution networks, all around us. In addition to such physical (infrastructure) networks, recent years have seen tremendous proliferation of social networks, such as Facebook, Twitter, LinkedIn, Instagram, Google+ and others. These powerful social networks are not only used for harnessing revenue from the infrastructure networks, but are also increasingly being used as "sensors" for monitoring the infrastructure networks. Accordingly, nowadays, analyses of social and infrastructure networks go hand-in-hand. The dissertation studies problems encountered in this set of diverse, heterogeneous, and interdependent networks through the application of graph analytics, combinatorial algorithms and machine learning.
- ✓ Published 17 peer reviewed papers, articles, book chapters which have been cited more than 100 times independently (no self-citation included) till date.

## REVIEWER EXPERIENCE

Served as a reviewer for the following journals:

- ✓ **IEEE Communications Surveys and Tutorials:** Impact Factor: 20.23, Eigen Factor: 0.03576, Article Influence Score: 5.532
- ✓ **Optical Switching and Networking:** Impact Factor: 1.113, 5-Year Impact Factor: 1.199, Source Normalized Impact per Paper (SNIP): 0.815, SCImago Journal Rank (SJR): 0.293
- ✓ **Journal of Communications and Networks:** Impact Factor: 1.93
- ✓ **Wireless Networks, Springer- The Journal of Mobile Communication, Computation and Information:** Impact Factor : 1.006
- ✓ **Ad Hoc Networks, Elsevier:** CiteScore: 3.39, Impact Factor: 1.660, 5-Year Impact Factor: 2.151, Source Normalized Impact per Paper (SNIP): 2.144, SCImago Journal Rank (SJR): 0.967
- ✓ **IEEE Transactions on Mobile Computing:** Impact Factor: 2.456
- ✓ **Advances in Multimedia, Hindawi:** Acceptance rate: 6%

## TEACHING EXPERIENCE

- ✓ Foundation of Algorithms (Spring 2016)
- ✓ Principles of Programming with Java (Spring 2013)
- ✓ Principles of Programming with C++ (Fall 2012 and Spring 2015)

## PATENT

Was the second inventor of the list of inventors in Microsoft Azure Security Machine Learning team filing the following patent:

- ✓ **Intelligent System For Detecting Multistage Attacks**: By using novel unsupervised and supervised graph-based machine learning algorithms, we have developed a system for detecting advanced cross service and resource attacks on cloud.

## AWARDS & ACHIEVEMENTS

- ✓ Part of the elite group of researchers with Erdos number 2 (<https://oakland.edu/enp/>)
- ✓ 3 times recipient of the prestigious block grant given to outstanding PhD students by the Computer Science department of Arizona State University
- ✓ Prestigious scholarship offered to select PhD and MS students forming a diverse set of computing-related research areas and institutions. Was one of only 3 students from Arizona State University who received the scholarship in each of 2013 and 2014
- ✓ Received Fellowship from MITACS Globalink 2011 for summer research internship in Canada
- ✓ Recipient of UGC Research Grant Award, 2010 for Department of Computer Science and Engineering, Jadavpur University, 2010

## PUBLICATIONS

- ✓ ***Relay node placement under budget constraint***  
Chenyang Zhou, **Anisha Mazumder** (corresponding author), Arun Das, Kaustav Basu, Navid Matin-Moghaddam, Saharnaz Mehrani, Arunabha Sen  
Pervasive and Mobile Computing Journal, 2019 [**Impact Factor: 2.974**]
- ✓ ***Region-Based Fault-tolerant Distributed File Storage System Design in Networks***  
Arunabha Sen, **Anisha Mazumder**, Sujogya Banerjee, Arun Das, Chenyang Zhou, and Shahrzad Shirazipourazad,  
Networks Journal, Wiley Online Library, 2015 [**Impact Factor: 0.83**]
- ✓ ***Smallest Pseudo Target Set Identification and Related Problems Using the Implicative Interdependency Model***  
Arun Das, Chenyang Zhou, Joydeep Banerjee, **Anisha Mazumder**, Arunabha Sen, Published as a chapter in the book Critical Infrastructure Security and Resilience, Springer, 2019
- ✓ ***Region based Fault-tolerant Distributed File Storage System Design Under Budget Constraint [Best Paper Award]***  
**Anisha Mazumder**, Arun Das, Chenyang Zhou, and Arunabha Sen , Published in the proceedings of the International Workshop on Reliable Networks Design and Modeling (RNDM) IEEE, 2014
- ✓ ***Influence Propagation in Competitive Scenario: Winning with Least Amount of Investment in Separated Threshold Model***  
**Anisha Mazumder**, and Arunabha Sen, Published in the proceedings of the IEEE Conference on Decision and Control (CDC), 2018
- ✓ ***On Social Network Firewall Selection***  
**Anisha Mazumder**, and Arunabha Sen, Published in proceedings of the IEEE International Conference on Computing, Networking and Communication (ICNC), 2016
- ✓ ***Budget Constrained Relay Node Placement Problem for Maximal “Connectedness”***  
**Anisha Mazumder**, Chenyang Zhou, Arun Das, Arunabha Sen, Published in the proceedings of the International Conference for Military Communications (MILCOM), IEEE, 2016
- ✓ ***Progressive Recovery from Failure in Multi-layered Interdependent Network Using a New Model of Interdependency***  
**Anisha Mazumder**, Chenyang Zhou, Arun Das, and Arun Sen, Critical Information Infrastructures Security: 9th International Conference, CRITIS 2014, Limassol, Cyprus, October 13-15, 2014, Revised Selected Papers. Cham: Springer International Publishing, 2016, ch. Critical Information Infrastructures Security Volume 8985 of the series Lecture Notes in Computer Science, pp. 368–380
- ✓ ***Spatio-Temporal Signal Recovery from Political Tweets in Indonesia***  
**Anisha Mazumder**, Arun Das, Sedat Gokalp, Nyunsu Kim, Arunabha Sen, and Hasan Davulcu, Published in the proceedings of the International Conference on Social Computing (SocialCom) ASE/IEEE, 2013
- ✓ ***Relay node placement under budget constraint***  
Chenyang Zhou, **Anisha Mazumder**, Arun Das, Kaustav Basu, Navid Matin-Moghaddam, Saharnaz Mehrani, Arunabha Sen, Published in the proceedings of the 19th International Conference on Distributed Computing and Networking (ICDCN), ACM, 2018
- ✓ ***On Mobile Sensor Data Collection Using Data Mules***  
Arun Das, **Anisha Mazumder**, Arunabha Sen, and Nathalie Mitton, Presented at the International Workshop on Wireless Sensor, Actuator and Robot Networks (WiSARN) held in conjunction with the International Conference on Computing, Networking and Communications (ICNC), IEEE, 2016

- ✓ ***On shortest single/multiple path computation problems in Fiber-Wireless (FiWi) access networks***  
Chenyang Zhou, **Anisha Mazumder**, Arunabha Sen, Martin Reisslein, Andrea Richa, Published in the proceedings of the International Conference on High Performance Switching and Routing (HPSR), 2014
  
- ✓ ***Identification of K Most Vulnerable Nodes in Multi-layered Network Using a New Model of Interdependency***  
Arunabha Sen, **Anisha Mazumder**, Joydeep Banerjee, Arun Das, and Randy Compton, Presented at the International Workshop on Network Science for Communication Networks (INFOCOM workshop), IEEE, 2014
  
- ✓ ***On the Impact of Coding Parameters on Storage Requirement of Region-based Fault Tolerant Distributed File System Design***  
Sujogya Banerjee, Arun Das, **Anisha Mazumder**, Zahra Derakhshandeh, and Arunabha Sen, Published in the proceedings of the International Conference on Computing, Networking and Communications (ICNC) IEEE, 2014
  
- ✓ ***Upper and Lower Bounds of Choice Number for Successful Channel Assignment in Cellular Networks***  
Ran Wang, Chenyang Zhou, **Anisha Mazumder**, Arun Das, H. A. Kierstead, and Arunabha Sen, Published in the proceedings of the International Conference on Communications (ICC) IEEE, 2015
  
- ✓ ***Reader Scheduling for Tag Access in RFID Systems***  
Arunabha Sen, Arun Das, Chenyang Zhou, **Anisha Mazumder**, Nathalie Mitton and Abdoul Aziz Mbacke, To be published in the proceedings of the International Conference on Network of the Future (NoF), IEEE, 2016
  
- ✓ ***On the Entity Hardening Problem in Multi-layered Interdependent Networks***  
Joydeep Banerjee, Arun Das, Chenyang Zhou, **Anisha Mazumder** and Arunabha Sen, Presented at the IEEE Workshop on Inter-Dependent Networks (INFOCOM Workshop), IEEE, 2015.