

Zubair Shafiq

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Research Interests

Internet Measurement; Privacy; Security; Performance

Education

- 2009–2014 **Ph.D. in Computer Science**
Department of Computer Science and Engineering, Michigan State University
- 2004–2008 **B.E. in Electrical Engineering**
National University of Sciences & Technology (NUST), Pakistan

Professional Experience

- 2014– **Assistant Professor**
Department of Computer Science, The University of Iowa
- 2009–2014 **Research Assistant**
Department of Computer Science and Engineering, Michigan State University
- 2013 **Research Intern**
IBM T. J. Watson Research Center
- 2012 **Research Intern**
Telefonica Research
- 2011 **Research Intern**
AT&T Labs – Research
- 2007–2009 **Research Engineer**
Next Generation Intelligent Networks Research Center, Pakistan

Honors and Awards

- 2018 **Andreas Pfitzmann Best Student Paper Award**, Privacy Enhancing Technologies Symposium
- 2018 **NSF CAREER Award**
- 2017 **Best Paper Award**, ACM Internet Measurement Conference
- 2015 **NSF CISE Research Initiation Initiative (CRII) Award**
- 2013 **Fitch-Beach Outstanding Graduate Research Award**, Michigan State University
- 2012 **Best Paper Award**, IEEE International Conference on Network Protocols
- 2011 **Best Poster Award**, Engineering Graduate Research Symposium, Michigan State University
- 2008 **Best Student Tertiary Project Award**, Pakistan Software House Association (P@SHA)
- 2008 **Best Project Award**, SOFTEC International Software Exhibition NUCES, Pakistan
- 2007 **Best Project Award**, All Pakistan Digital Innovation Competition, NUST, Pakistan
- 2007, 2008 **Dean's Plaque of Excellence**, National University of Sciences & Technology, Pakistan

Publications

- S&P **AdGraph: A Graph-Based Approach to Ad and Tracker Blocking**
Umar Iqbal, Peter Snyder, Shitong Zhu, Benjamin Livshits, Zhiyun Qian, Zubair Shafiq
IEEE Symposium on Security & Privacy, San Francisco, 2020
- PETS **No Place to Hide: Inadvertent Location Privacy Leaks on Twitter**
Jonathan Rusert, Osama Khalid, Dat Hong, Zubair Shafiq, Padmini Srinivasan
Privacy Enhancing Technologies Symposium, Stockholm, 2019
- PETS **A Girl Has No Name: Automated Authorship Obfuscation using X-Mutant**
Asad Mahmood, Faizan Ahmad, Zubair Shafiq, Padmini Srinivasan, Fareed Zaffar
Privacy Enhancing Technologies Symposium, Stockholm, 2019
- ASONAM **A Postmortem of Suspended Twitter Accounts in the 2016 U.S. Presidential Election**
Huyen Le, Bob Boynton, Zubair Shafiq, Padmini Srinivasan
IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), Vancouver, 2019
Acceptance rate: 41/286=14%
- WWW **Measurement and Early Detection of Third-Party Application Abuse on Twitter**
Shehroze Farooqi, Zubair Shafiq
The Web Conference (WWW), San Francisco, 2019
Acceptance rate: 225/1247=18%
- WWW **ShadowBlock: A Lightweight and Stealthy Adblocking Browser**
Shitong Zhu, Umar Iqbal, Zhongjie Wang, Zhiyun Qian, Zubair Shafiq, Weiteng Chen
The Web Conference (WWW), San Francisco, 2019
Acceptance rate: 225/1247=18%
- WWW **Measuring Political Personalization of Google News Search**
Huyen Le, Raven Maragh, Brian Ekdale, Timothy Havens, Andrew High, Zubair Shafiq
The Web Conference (WWW), San Francisco, 2019
Acceptance rate: 20% (short)
- TDSC **Large Scale Characterization of Software Vulnerability Life Cycles**
Muhammad Shahzad, Zubair Shafiq, Alex X. Liu
IEEE Transactions on Dependable and Secure Computing, 2019
- PETS **NoMoAds: Effective and Efficient Cross-App Mobile Ad-Blocking**
Anastasia Shuba, Athina Markopoulou, Zubair Shafiq
Privacy Enhancing Technologies Symposium, Barcelona, 2018
Acceptance rate: 16.5%
- Andreas Pfitzmann Best Student Paper Award**
- NDSS **Measuring and Disrupting Anti-Adblockers Using Differential Execution Analysis**
Shitong Zhu, Xunchao Hu, Zhiyun Qian, Zubair Shafiq, Heng Yin
Network and Distributed System Security Symposium, San Diego, 2018
Acceptance rate: 71/331=21.4%
- INFOCOM **Real-time Video Quality of Experience Monitoring for HTTPS and QUIC**
M. Hammad Mazhar, Zubair Shafiq
IEEE International Conference on Computer Communications, Honolulu, 2018
Acceptance rate: 309/1606 =19.2%
- TON **Optimizing Internet Transit Routing for Content Delivery Networks**
Faraz Ahmed, Zubair Shafiq, Amir Khakpour, Alex Liu
IEEE/ACM Transactions on Networking, 2018

- TBD **Optimizing Taxi Driver Profit Efficiency: A Spatial Network-based Markov Decision Process Approach**
Xun Zhou, Huigui Rong, Chang Yang, Qun Zhang, Amin Vahedian Khezerlou, Hui Zheng, Zubair Shafiq, Alex Liu
IEEE Transactions on Big Data, 2018
- IMC **The Ad Wars: Retrospective Measurement and Analysis of Anti-Adblock Filter Lists**
Umar Iqbal, Zubair Shafiq, Zhiyun Qian
ACM Internet Measurement Conference, London, 2017
Acceptance rate: 42/179=23.5%
- IMC **Measuring and Mitigating OAuth Access Token Abuse by Collusion Networks**
Shehroze Farooqi, Fareed Zaffar, Nektarios Leontiadis, Zubair Shafiq
ACM Internet Measurement Conference, London, 2017
Acceptance rate: 42/179=23.5%
Best Paper Award
- ICNP **Peering vs. Transit: Performance Comparison of Peering and Transit Interconnections**
Adnan Ahmed, Zubair Shafiq, Harkeerat Bedi, Amir Khakpour
IEEE International Conference on Network Protocols, Toronto, 2017
Acceptance rate: 39/209=18.7%
- ICNP **Suffering from Buffering? Detecting QoE Impairments in Live Video Streams**
Adnan Ahmed, Zubair Shafiq, Harkeerat Bedi, Amir Khakpour
IEEE International Conference on Network Protocols, Toronto, 2017
Acceptance rate: 39/209=18.7%
- ICNP **Multipath TCP Traffic Diversion Attacks and Countermeasures**
Ali Munir, Zhiyun Qian, Zubair Shafiq, Alex Liu, Franck Le
IEEE International Conference on Network Protocols, Toronto, 2017
Acceptance rate: 39/209=18.7%
- ICDM **Accurate Detection of Automatically Spun Content via Stylometric Analysis**
Usman Shahid, Shehroze Farooqi, Raza Ahmad, Zubair Shafiq, Padmini Srinivasan, Fareed Zaffar
IEEE International Conference on Data Mining, New Orleans, 2017
Acceptance rate: 72/778=9.2%
- TOPS **Measuring, Characterizing, and Detecting Facebook Like Farms**
Muhammad Ikram, Lucky Onwuzurike, Shehroze Farooqi, Emiliano De Cristofaro, Arik Friedman, Guillaume Jourjon, Dali Kaafar, Zubair Shafiq
ACM Transactions on Privacy and Security, 2017
- SIGMETRICS **Characterizing and Modeling Patching Practices of Industrial Control Systems**
Brandon Wang, Xiaoye Li, Leandro P. de Aguiar, Daniel S. Menasche, Zubair Shafiq
ACM International Conference on Measurement and Modeling of Computer Systems, Urbana-Champaign, 2017
Acceptance rate: 27/203=13.3%
- PETS **Detecting Anti Ad-blockers in the Wild**
Muhammad Haris Mughees, Zhiyun Qian, Zubair Shafiq
Privacy Enhancing Technologies Symposium, Minneapolis, 2017
Acceptance rate: 22.5%

- ICDCS **Distributed Load Balancing in Key-Value Networked Caches**
Sikder Huq, Zubair Shafiq, Sukumar Ghosh, Amir Khakpour, Harkeerat Bedi
IEEE International Conference on Distributed Computing Systems, Atlanta, 2017
Acceptance rate: $90/531=16.9\%$
- CHI **Revisiting The American Voter on Twitter**
Huyen Le, G.R. Boynton, Yelena Mejova, Zubair Shafiq, Padmini Srinivasan
ACM Conference on Human Factors in Computing Systems, Denver, 2017
Acceptance rate: 25%
- ICWSM **Scalable News Slant Measurement Using Twitter**
Huyen Le, Zubair Shafiq, Padmini Srinivasan
AAAI International Conference on Web and Social Media, Denver, 2017
Acceptance rate: $(49 \text{ full} + 62 \text{ short})/357 = 31\%$
- HT **Bumps and Bruises: Mining Presidential Campaign Announcements on Twitter**
Huyen Le, G.R. Boynton, Yelena Mejova, Zubair Shafiq, Padmini Srinivasan
ACM Conference on Hypertext and Social Media, Prague, 2017
- Networking **Cascade Size Prediction in Online Social Networks**
Zubair Shafiq, Alex Liu
IFIP Networking, Prague, 2017
Acceptance rate: $43/150=28.7\%$
Best Paper Award Candidate (3 nominations out of 43 accepted papers)
- Networking **A Graph Theoretic Approach to Fast and Accurate Malware Detection**
Zubair Shafiq, Alex Liu
IFIP Networking, Prague, 2017
Acceptance rate: $43/150=28.7\%$
- eCrime **Characterizing Key Stakeholders in an Online Black-Hat Marketplace**
Shehroze Farooqi, Muhammad Ikram, Emiliano De Cristofaro, Arik Friedman, Guillaume Jourjon, Dali Kaafar, Zubair Shafiq, Fareed Zaffar
IEEE/APWG Symposium on Electronic Crime Research, Prague, 2017
Acceptance rate: $7/17 = 41\%$
- TIST **A Traffic Flow Approach to Early Detection of Gathering Events: Comprehensive Results**
Amin Khezerlou, Xun Zhou, Lufan Li, Zubair Shafiq, Alex X. Liu, Fan Zhang
ACM Transactions on Intelligent Systems and Technology, 2017
- ICNP **Optimizing Internet Transit Routing for Content Delivery Networks**
Faraz Ahmed, Zubair Shafiq, Amir Khakpour, Alex Liu
IEEE International Conference on Network Protocols, Singapore, 2016
Acceptance rate: $46/229 = 20.1\%$
- DSN **Malware Slums: Measurement and Analysis of Malware on Traffic Exchanges**
Salman Yousaf, Umar Iqbal, Shehroze Farooqi, Raza Ahmad, Zubair Shafiq, Fareed Zaffar
IEEE/IFIP International Conference on Dependable Systems and Networks, France, 2016
Acceptance rate: $58/259 = 22.4\%$
- SIGMETRICS **QoE Analysis of a Large-Scale Live Video Streaming Event**
Adnan Ahmed, Zubair Shafiq, Amir R. Khakpour
ACM International Conference on Measurement and Modeling of Computer Systems, France, 2016
Acceptance rate: $(28+33)/208 = 29.3\%$

- ICDCS **The Internet is For Porn: Measurement and Analysis of Online Adult Traffic**
Faraz Ahmed, Zubair Shafiq, Alex X. Liu
IEEE International Conference on Distributed Computing Systems, Japan, 2016
Acceptance rate: 68/386 =17.6%
- INFOCOM **Characterizing Caching Workload of a Large Commercial Content Delivery Network**
Zubair Shafiq, Amir R. Khakpour, Alex X. Liu
IEEE International Conference on Computer Communications, San Francisco, 2016
Acceptance rate: 300/1644 =18.3%
- SMP **What Campaigns Become as Social Media Become the Infrastructure of Political Communication**
G.R. Boynton, Huyen Le, Yelena Mejova, Zubair Shafiq, Padmini Srinivasan
Social Media and Politics, 2016
- SIGSPATIAL **A Traffic Flow Approach to Early Detection of Gathering Events**
Xun Zhou, Amin Vahedian Khezerlou, Alex Liu, Zubair Shafiq, Fan Zhang
ACM International Conference on Advances in Geographic Information Systems, San Francisco, 2016
Acceptance rate: 40/217 =18.4%
- CIKM **The Rich and the Poor: A Markov Decision Process Approach to Optimizing Taxi Driver Revenue Efficiency**
Huigui Rong, Xun Zhou, Chang Yang, Zubair Shafiq, Alex Liu
ACM International Conference on Information and Knowledge Management, Indianapolis, 2016
Acceptance rate: (165 long + 105 short)/1644=28.9%
- TON **Characterizing and Optimizing Cellular Network Performance during Crowded Events**
Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Shobha Venkataraman, Jia Wang
IEEE/ACM Transactions on Networking, 2016
- NSF/FCC **Tracking Mobile Video QoE in the Encrypted Internet**
QoE Zubair Shafiq
NSF/FCC Workshop on Tracking Quality of Experience in the Internet, Princeton, 2015
- NSF/FCC **Bidirectional Crosslayer QoE Optimization**
QoE Srikanth Sundaresan, Zubair Shafiq
NSF/FCC Workshop on Tracking Quality of Experience in the Internet, Princeton, 2015
- TMC **Geospatial and Temporal Dynamics of Application Usage in Cellular Data Networks**
Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang
IEEE Transactions on Mobile Computing, 2015
- IMC **Paying for Likes? Understanding Facebook Like Fraud Using Honeypots**
Emiliano De Cristofaro, Arik Friedmam, Guillaume Jourjon, Dali Kaafar, Zubair Shafiq
ACM Internet Measurement Conference, 2014
Acceptance rate: 43/188 =22.9%
- SIGMETRICS **Understanding the Impact of Network Dynamics on Mobile Video User Engagement**
Zubair Shafiq, Jeffrey Erman, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang
ACM International Conference on Measurement and Modeling of Computer Systems, 2014
Acceptance rate: 40/238 =16.8%
- SIGMETRICS **Revisiting Caching in Content Delivery Networks**
Zubair Shafiq, Alex X. Liu, Amir Khakpour
ACM International Conference on Measurement and Modeling of Computer Systems, 2014
Acceptance rate: (40+32)/238 =30.2%

- SIGMETRICS **A First Look at Cellular Network Performance during Crowded Events**
 Zubair Shafiq, Alex X. Liu, Amir Khakpour
ACM International Conference on Measurement and Modeling of Computer Systems, 2013
 Acceptance rate: 27/196 =13.8%
- ICNP **Who are You Talking to? Breaching Privacy in Encrypted IM Networks**
 Muhammad U. Ilyas, Zubair Shafiq, Alex X. Liu, Hayder Radha
IEEE International Conference on Network Protocols, 2013
 Acceptance rate: 46/251 =18.3%
- HotNets **Cross-Path Inference Attacks on Multipath TCP**
 Zubair Shafiq, Franck Le, Mudhakar Srivatsa, Alex X. Liu
ACM Workshop on Hot Topics in Networks, 2013
 Acceptance rate: 26/110 =23.6%
- CSCW **Is News Sharing on Twitter Ideologically Biased?**
 Jonathan Morgan, Cliff Lampe, Zubair Shafiq
ACM Conference on Computer Supported Cooperative Work and Social Computing, 2013
 Acceptance rate: 35.6%
- TON **Large Scale Measurement and Characterization of Cellular Machine-to-Machine Traffic**
 Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang
IEEE/ACM Transactions on Networking, 2013
- JSAC **Identifying Leaders and Followers in Online Social Networks**
 Zubair Shafiq, Muhammad U. Ilyas, Alex X. Liu, Hayder Radha
IEEE Journal on Selected Areas in Communications, 2013
- JSAC **A Distributed Algorithm for Identifying Information Hubs in Social Networks**
 Muhammad U. Ilyas, Zubair Shafiq, Alex X. Liu, Hayder Radha
IEEE Journal on Selected Areas in Communications, 2013
- ICNP **A Semantics Aware Approach to Automated Reverse Engineering Unknown Protocols**
 Yipeng Wang, Xiaochun Yun, Zubair Shafiq, Alex X. Liu, Zhibin Zhang, Liyan Wang, Danfeng (Daphne) Yao, Yongzheng Zhang, Li Guo
IEEE International Conference on Network Protocols, 2012
 Acceptance rate: 30/131 =22.9%
Best Paper Award
- SIGMETRICS **A First Look at Cellular Machine-to-Machine Traffic – Large Scale Measurement and Characterization**
 Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang
ACM International Conference on Measurement and Modeling of Computer Systems, London, 2012
 Acceptance rate: 31/203 =15.3%
- ICSE **A Large Scale Exploratory Analysis of Software Vulnerability Life Cycles**
 Muhammad Shahzad, Zubair Shafiq, Alex X. Liu
International Conference on Software Engineering, Switzerland, 2012
 Acceptance rate: 87/408 =21.3%
- INFOCOM **Characterizing Geospatial Dynamics of Application Usage in a 3G Cellular Data Network**
 Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang
IEEE Conference on Computer Communications, Orlando, 2012
 Acceptance rate: 278/1547 =17.9%

- JNSM **TCAMChecker: A Software Approach to the Error Detection and Correction of TCAM-based Networking Systems**
Zubair Shafiq, Chad Meiners, Alex Liu, Ke Shen, Zheng Qin
Springer Journal of Network and Systems Management, 2012
- SIGMETRICS **Characterizing and Modeling Internet Traffic Dynamics of Cellular Devices**
Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jia Wang
ACM International Conference on Measurement and Modeling of Computer Systems, San Jose, 2011
Acceptance rate: $26/177 = 14.6\%$
- Networking **A Random Walk Approach to Modeling the Dynamics of the Blogosphere**
Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jia Wang
IFIP Networking, Spain, 2011
Acceptance rate: $64/294 = 21.7\%$
- INFOCOM **A Distributed and Privacy-Preserving Algorithm for Identifying Information Hubs in Social Networks**
Muhammad U. Ilyas, Zubair Shafiq, Alex X. Liu, Hayder Radha
IEEE Conference on Computer Communications, Spain, 2011
Acceptance rate: $427/1283 = 23.4\%$
- RAID **PE-Miner: Mining Structural Information to Detect Malicious Executables in Realtime**
Zubair Shafiq, Syeda Momina Tabish, Fauzan Mirza, Muddassar Farooq
International Symposium On Recent Advances In Intrusion Detection, France, 2009
Acceptance rate: $17/59 = 28.8\%$
- AISec-CCS **Using Spatio-Temporal Information in API Calls with Machine Learning Algorithms for Malware Detection and Analysis**
Faraz Ahmed, Haider Hameed, Zubair Shafiq, Muddassar Farooq
Workshop on Security and Artificial Intelligence, ACM Conference on Computer & Communications Security, Chicago, 2009
- CSI-KDD **Malware Detection using Statistical Analysis of Byte-Level File Content**
Syeda Momina Tabish, Zubair Shafiq, Muddassar Farooq
Workshop on CyberSecurity and Intelligence Informatics (CSI), ACM Conference on Knowledge Discovery and Data Mining, France, 2009
- VB **PE-Probe: leveraging packer detection and structural information to detect malicious portable executables**
Zubair Shafiq, Syeda Momina Tabish, Muddassar Farooq
Virus Bulletin Conference, Switzerland, 2009
- GECCO **Evolvable Malware**
Sadia Noreen, Shafaq Murtaza, Zubair Shafiq, Muddassar Farooq
ACM Genetic and Evolutionary Computation Conference, Canada, 2009
- FSS **Fuzzy Case Based Reasoning for Facial Expression Recognition**
Asia Khanum, Muid Mufti, M. Y. Javed, Zubair Shafiq
Elsevier Fuzzy Sets and Systems, 2009
- DIMVA **Embedded Malware Detection using Markov n-grams**
Zubair Shafiq, Syed Ali Khayam, Muddassar Farooq
International Conference on Detection of Intrusions, Malware and Vulnerability Assessment, France, 2008
Acceptance rate: $14/42 = 33.3\%$

- GECCO **Improving Accuracy of Immune Inspired Malware Detectors using Intelligent Features**
Zubair Shafiq, Syed Ali Khayam, Muddassar Farooq
ACM Genetic and Evolutionary Computation Conference, Atlanta, 2008
- EvoComNet **A Comparative Study of Fuzzy Inference Systems, Neural Networks and Adaptive Neuro Fuzzy Inference Systems for Portscan Detection**
Zubair Shafiq, Muddassar Farooq, Syed Ali Khayam
Applications of Evolutionary Computing, EvoComNet, Italy, 2008

Funding

External Competitive Research Grants

- NSF-SaTC **A Multi-Layer Learning Approach to Mobile Traffic Filtering**
National Science Foundation
PI, Duration: 2018-2021, Total: \$500,000, Share: \$250,000
Personnel: Zubair Shafiq (PI: Iowa); Athina Markopoulou (PI: UC Irvine)
- NSF-CAREER **Quality of Experience and Network Management in the Encrypted Internet**
National Science Foundation
PI, Duration: 2018-2023, Total: \$500,000, Share: \$500,000
Personnel: Zubair Shafiq (PI: Iowa)
- NSF-SaTC **The Web Ad Technology Arms Race: Measurement, Analysis, and Countermeasures**
National Science Foundation
PI, Duration: 2017-2020, Total: \$500,000, Share: \$250,000
Personnel: Zubair Shafiq (PI: Iowa); Zhiyun Qian (PI: UC Riverside)
- NSF-NeTS **Towards Scalable and Energy Efficient Cellular IoT Communication**
National Science Foundation
PI, Duration: 2016-2019, Total: \$500,000, Share: \$166,000
Personnel: Zubair Shafiq (PI: Iowa); K.K. Ramakrishnan (PI: UC Riverside); Koushik Kar (PI: RPI)
- NSF-SaTC **Multipath TCP Side Channel Vulnerabilities and Defenses**
National Science Foundation
PI, Duration: 2015-2018, Total: \$500,000, Share: \$167,000
Personnel: Zubair Shafiq (PI: Iowa); Zhiyun Qian (PI: UC Riverside); Alex Liu (PI: Michigan State University)
- NSF-NeTS **Towards Measurement and Optimization of Internet Video Quality of Experience**
National Science Foundation
PI, Duration: 2015-2018, Total: \$175,000 + \$16,000 (REU Supplement 2016), Share: \$191,000
Personnel: Zubair Shafiq (PI: Iowa)
- DTL **Detection and Circumvention of Ad-Block Detectors**
Data Transparency Lab
PI, Duration: 2016-2017, Total: \$56,000, Share: \$28,000
Personnel: Zubair Shafiq (PI: Iowa); Zhiyun Qian (PI: UC Riverside)
- ### Internal Competitive Research Grants
- UIRF **Social Media Powered Real-Time Digital News Recommendation**
University of Iowa Research Foundation
PI, Duration: 2015-2016, Total: \$75,000, Share: \$75,000
Personnel: Zubair Shafiq (PI: Iowa)

Obermann **Heterogeneous Network Data Analytics to Improve Urban Sustainability**

Obermann Center Interdisciplinary Research Grant

PI, Duration: 2015-2016, Total: \$12,000, Share: \$6,000

Personnel: Zubair Shafiq (PI: Iowa); Xun Zhou (PI: Iowa)

Industry Grants/Gifts

Siemens PI, Duration: 2018, Total: \$60,000, Share: \$60,000
Personnel: Zubair Shafiq (PI: Iowa)

Verizon PI, Duration: 2018, Total: \$20,000, Share: \$20,000
Personnel: Zubair Shafiq (PI: Iowa)

Minim PI, Duration: 2018, Total: \$66,164, Share: \$66,164
Personnel: Zubair Shafiq (PI: Iowa)

Siemens PI, Duration: 2017, Total: \$30,000, Share: \$30,000
Personnel: Zubair Shafiq (PI: Iowa)

Nokia PI, Duration: 2017, Total: \$53,200, Share: \$53,200
Personnel: Zubair Shafiq (PI: Iowa)

Futurewei PI, Duration: 2017, Total: \$100,384, Share: \$100,384
Personnel: Zubair Shafiq (PI: Iowa)

Facebook PI, Duration: 2016, Total: \$8,400, Share: \$8,400
Personnel: Zubair Shafiq (PI: Iowa)

Teaching

CS 2620 **Networking & Security for Informatics**
Class Size: 42, Spring 2019, The University of Iowa

CS 4980 **Internet Measurement**
Class Size: 24, Fall 2018, The University of Iowa

CS 2620 **Networking & Security for Informatics**
Class Size: 59, Spring 2018, The University of Iowa

CS 2620 **Networking & Security for Informatics**
Class Size: 52, Spring 2017, The University of Iowa

CS 4980 **Network Security and Privacy**
Class Size: 20, Fall 2016, The University of Iowa

CS 2620 **Networking & Security for Informatics**
Class Size: 41, Spring 2016, The University of Iowa

CS 4980 **Advanced Computer Networks**
Class Size: 23, Fall 2015, The University of Iowa

CS 2620 **Networking & Security for Informatics**
Class Size: 38, Spring 2015, The University of Iowa

CS 4980 **Internet Measurement**
Class Size: 17, Fall 2014, The University of Iowa

Students

Doctorate (Primary Supervisor)

2015-current Huyen Le

2015-current Adnan Ahmed
2015-current Shehroze Farooqi
2016-current Umar Iqbal
2016-current Hammad Mazhar
2018-current John Cook

Doctorate (Secondary Supervisor)

2018-current Asad Mahmood (Primary Supervisor: Padmini Srinivasan)
2018-current Jonathan Rusert (Primary Supervisor: Padmini Srinivasan)
2016-2019 Amin Khezerlou (Primary Supervisor: Xun Zhou)
2015-2018 Sikder Huq (Primary Supervisor: Sukumar Ghosh)

Masters

2018 Daniel Zhou
2017 Kaustubh Mungale
2017 John Cook
2016-2017 Sai Kalyan Moguloju
2016 Raghavendranath Kandula
2016 Lufan Li
2016 Avinash Talreja
2016 Abdulaziz Alharbi

Undergraduate

2019 Charlie Wolfe
2019 Ashton Woiwood
2018 Basil Chatha
2017 Treyton Krupp (NSF REU)
2017 Daniel Zhou (NSF REU)
2017 Gabriel Akanni (SROP)
2016-2017 Xiaoye Li (NSF REU)
2016 Yu Dai
2015 Mirza Besic
2015 Fei Tang

High School

2019 Kathy Zhang (SSTP)
2018 Alice Martynova (SSTP)
2017 William Kim (SSTP)
2016 Brandon Wang (SSTP)

External Service

- Conference TPC/Reviewer PETS (2020, 2019, 2018, 2017), CoNEXT (2019), NDSS MADWeb Workshop (2019), CSCW (2019), WWW (2018), INFOCOM (2017, 2015, 2010, 2009), WPES (2018), SIGCOMM Internet-QoE Workshop (2017), ACM SIGCOMM Workshop on IoT Security and Privacy (2018), WWW CyberSafety Workshop (2018), WWW Workshop on Location and the Web (2018), ICNP (2014, 2013), SIGMETRICS (2013), MASCOTS (2013), ICDCN (2017), ICCCN (2016), QEST (2016), TRIDENTCOM (2015)
- Journal Reviewer IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Transactions on Network and Service Management, ACM Transactions on Multimedia Computing, IEEE Transactions on Cognitive Communications and Networking, ACM SIGCOMM Computer Communication Review, Elsevier Computer Communications, Elsevier Performance Evaluation, Springer Wireless Networks
- PC Co-Chair Student Workshop - ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2018)
- PC Co-Chair WWW 8th International Workshop on Location and the Web (LocWeb 2018)
- Poster Chair ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS 2018)
- Technical Committee Elsevier Computer Communications (2015-current)
- Guest Editor Special Issue on Mobile Traffic Analytics, Elsevier Computer Communications (2016)
- Editorial Board Proceedings on Privacy Enhancing Technologies (PoPETs) (2019)
- Panelist NSF (2017, 2018)
- External Reviewer NSF (2018)

Internal Service

- Committee Department Executive Committee
Department of Computer Science, The University of Iowa, 2016-current
- Committee Faculty Recruitment Committee
Department of Computer Science, The University of Iowa, 2015, 2016, 2017
- Mentor Black Girls Do Science
College of Engineering, The University of Iowa, 2015, 2016
- Mentor Iowa Edge Classroom Experience
Center for Diversity and Enrichment, The University of Iowa, 2015, 2016, 2017, 2018
- Mentor Summer Research Opportunities Program (SROP)
Graduate College, The University of Iowa, 2017
- Mentor Secondary Student Training Program (SSTP)
Belin-Blank Center, The University of Iowa, 2016, 2017, 2018

Select Industry Impact

AdGraph in Brave Browser Our machine learning based ad-blocking system (AdGraph <https://arxiv.org/abs/1805.09155>) is being implemented in Brave Browser (see official announcement: <https://brave.com/brave-proposes-a-machine-learning-approach-for-ad-blocking>; GitHub: <https://github.com/brave/brave-core/tree/page-graph-integration>; <https://uiowa-irl.github.io/AdGraph>).

Facebook Graph API Abuse The OAuth access token vulnerability and abuse disclosed in our paper titled "Measuring and Mitigating OAuth Access Token Abuse by Collusion Networks" @ ACM IMC 2017 (Best Paper Award) has resulted in significant changes to Facebook's Graph API.

MPTCP Security The multipath TCP vulnerability discovered in our paper titled "Multipath TCP Traffic Diversion Attacks and Countermeasures" @ IEEE ICNP 2017 has been recognized and the fix proposed in our paper has been adopted by the IETF MPTCP Working Group in RFC 6824 (see <http://www.tessares.net/july-2017>).

Selected Talks

Colloquium Ad-mageddon: The Next Frontier in Web Privacy
UC Irvine, Irvine, CA, 2019

Colloquium Ad-mageddon: The Next Frontier in Web Privacy
UC Riverside, Riverside, CA, 2019

Invited AI-Powered Adblocking: Challenges and Opportunities
Ad-Blocking Dev Summit, San Francisco, CA, 2018

Invited Ad Tech vs. Ad-blockers: Challenges and Opportunities
Dagstuhl Seminar on Web Application Security, Schloss Dagstuhl, Germany, 2018

Invited Quality of Experience and Network Management in the Encrypted Internet
YouTube, San Bruno, CA, 2018

Invited QoE Optimization in the Encrypted Internet
Verizon Digital Media Services, Santa Monica, CA, 2018

Invited Big Data, Big Brother
Lahore University of Management Sciences (LUMS), Lahore, Pakistan, 2018

Colloquium Measuring and Modeling Tussles in Cyberspace
University of Oregon, Eugene, OR, 2017

Invited Big Data, Big Brother
Coe College, Cedar Rapids, IA, 2017

Panel Algorithms: The Personal Is Political
Obermann Conversations, Iowa City, IA, 2017

Invited Big Data, Big Brother
UI Summer Research Opportunities Program (SROP) Speaker Series, Iowa City, IA, 2017

Colloquium Machine Learning on Encrypted Traffic: Past, Present, Future
Universidade Federal do Rio de Janeiro (UFRJ), Rio, Brazil, 2017

Keynote The Arms Race Between Ad-Tech and Ad-Blockers
35th Brazilian Symposium on Computer Networks and Distributed Systems, Belem, Brazil, 2017

Tutorial Machine Learning on Encrypted Traffic: Past, Present, Future
35th Brazilian Symposium on Computer Networks and Distributed Systems, Belem, Brazil, 2017

- Colloquium Big Data, Big Brother
Electrical & Computer Engineering Graduate Seminar, The University of Iowa, Iowa City, IA, 2017
- Keynote Tracking and Optimizing Quality of Experience in the Encrypted Internet
IEEE PerCom Workshop on Data Analytics for Mobile Networking, Big Island, HI, 2017
- Invited Big Data, Big Brother
Hawkeye Lunch & Learn, Office of Outreach & Engagement, The University of Iowa, Iowa City & Des Moines, IA, 2017
- Invited Detection and Circumvention of Anti Ad-Blockers: A New Arms Race on the Web
PrivacyCon, Federal Trade Commission (FTC), Washington, DC, 2017
- Invited Tracking and Surveillance in the Online Advertising Ecosystem
Iowa City Foreign Relations Council, Iowa City, IA, 2016
- Invited Detection and Circumvention of Anti Ad-Blockers
Data Transparency Lab (DTL) Conference, New York, NY, 2016
- Colloquium Tracking Reputation Fraud on Facebook
Management Sciences Seminar Series, Tippie College of Business, The University of Iowa, Iowa City, IA, 2016
- Panel Security and privacy challenges within social networks
WorldCanvass, Big Data: Big Brother or Big Sister?, Iowa City, IA, 2016
- Invited Spying on Spammers: Tracking Reputation Fraud on Facebook
University of Iowa Computing Conference, Iowa City, IA, 2016
- Keynote Tracking, Surveillance, and Fraud in the Online Advertising Ecosystem
Iowa Computer Science Graduate Research Symposium, Iowa City, IA, 2015
- Invited Tracking Cyber Criminals in Online Social Networks
Speaker's Bureau, Knox College, Galesburg, IL, 2015
- Invited Tracking Cyber Criminals in Online Social Networks
University of Iowa Tech Forum, The University of Iowa, Iowa City, IA, 2015