

## Shehar Bano

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Last updated: September 20, 2019

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### Academic Positions & Employment.

- **Facebook, London**
  - Research Scientist, Feb 2019–Now
- **University of Cambridge, Department of Computer Science and Technology**
  - Visiting Researcher, Jul 2019–Now
- **University College London, Dept. of Computer Science**
  - Research Associate, Mar 2017–Jan 2019
- **Chainspace, London**
  - Co-Founder and Senior Researcher, Aug 2018–Jan 2019
- **University of Cambridge, Computer Laboratory**
  - Research Assistant, Oct 2013–Feb 2017
- **UC Berkeley, International Computer Science Institute (ICSI)**
  - Internship, Jul 2013–Sep 2013
- **Independent Researcher**
  - Independent Researcher, Nov 2012–Jun 2013
- **UC Berkeley, International Computer Science Institute (ICSI)**
  - Internship, Aug 2012–Oct 2012
- **Foundation for Advancement of Science and Technology (FAST). Islamabad, Pakistan**
  - Research Assistant, Feb 2012–Jul 2012
- **National University of Science and Technology (NUST). Islamabad, Pakistan**
  - Research Assistant, May 2011–Jan 2012

### Education.

- **Ph.D. in Computer Science, Feb 2017**
  - University of Cambridge. Thesis: “Characterization of Internet Censorship from Multiple Perspectives”.
  - Supervisor: Jon Crowcroft. Co-Supervisors: Ross Anderson, Steven Murdoch (University College London), Vern Paxson (UC Berkeley).
- **Masters in Computer & Communication Security, Feb 2013**
  - CGPA: 3.95/4.0. National University of Science & Technology. Islamabad, Pakistan
- **Bachelors in Computer Science, Sep 2010**
  - CGPA: 3.98/4.0. International Islamic University. Islamabad, Pakistan

### Awards.

- **Rising Star in Computer Networking and Communications, N2Women (Oct 2018)**
  - Awarded annually to 10 “most impactful and inspiring women” in networking and communications
- **Creative Leader with Social Heart, The Dots & Squarespace (Sep 2018)**
  - A list of 100 influential changemakers that are making the world a better place
- **Innovators Under 35, MIT Technology Review (Jul 2018)**
  - Awarded annually to the world’s top 35 “exceptionally talented technologists whose work has great potential to transform the world” under the age of 35
- **Mary Bradburn Scholarship (£3,000), The British Federation of Women Graduates (Aug 2016)**
- **Best Paper Nomination, top conference ACM Internet Measurement Conference (Nov 2014)**
- **Honorary Cambridge Trust Scholar, University of Cambridge (Aug 2013)**
- **President’s Gold Medal, NUST, Pakistan (Feb 2013)**
- **Merit Scholarship, International Islamic University, Pakistan (2006-08)**
- **National Talent Scholarship, Board of Intermediate Education, Peshawar, Pakistan (Aug 2004)**

## **Publications.**

[C = Conference] [J = Journal] [W = Workshop] [P = Poster] [T = Technical Report (Unrefereed)] [M = Magazine (Unrefereed)]

- [T] Zachary Amsden, Ramnik Arora, **Shehar Bano**, Mathieu Baudet, Sam Blackshear, Abhay Bothra, George Cabrera, Christian Catalini, Konstantinos Chalkias, Evan Cheng, Avery Ching, Andrey Chursin, George Danezis, Gerardo Di Giacomo, David L. Dill, Hui Ding, Nick Doudchenko, Victor Gao, Zhenhuan Gao, François Garillot, Michael Gorven, Philip Hayes, J. Mark Hou, Yuxuan Hu, Kevin Hurley, Kevin Lewi, Chunqi Li, Zekun Li, Dahlia Malkhi, Sonia Margulis, Ben Maurer, Payman Mohassel, Ladi de Naurois, Valeria Nikolaenko, Todd Nowacki, Oleksandr Orlov, Dmitri Perelman, Alistair Pott, Brett Proctor, Shaz Qadeer, Rain, Dario Russi, Bryan Schwab, Stephane Sezer, Alberto Sonnino, Herman Venter, Lei Wei, Nils Wernerfelt, Brandon Williams, Qinfan Wu, Xifan Yan, Tim Zakian, Runtian Zhou. “The Libra Blockchain”, Facebook Calibra whitepaper, June 2019.
- [T] **Shehar Bano**, Mathieu Baudet, Avery Ching, Andrey Chursin, George Danezis, François Garillot, Zekun Li, Dahlia Malkhi, Oded Naor, Dmitri Perelman, Alberto Sonnino. “State Machine Replication in the Libra Blockchain”, Facebook Calibra whitepaper, June 2019.
- [T] **Shehar Bano**, Christian Catalini, George Danezis, Nick Doudchenko, Ben Maurer, Alberto Sonnino, Nils Wernerfelt. “Moving Toward Permissionless Consensus”, Facebook Calibra whitepaper, June 2019.
- [C] **Shehar Bano**, Alberto Sonnino, Mustafa Al-Bassam, Sarah Azouvi, Patrick McCorry, Sarah Meiklejohn, and George Danezis. “SoK: Consensus in the Age of Blockchains”. The ACM conference on Advances in Financial Technologies (AFT), 2019.
- [C] Alberto Sonnino, Mustafa Al-Bassam, **Shehar Bano** and George Danezis. “Coconut: Threshold Issuance Selective Disclosure Credentials with Applications to Distributed Ledgers”. (To appear) The Network and Distributed System Security Symposium (NDSS), 2019.
- [J] **Shehar Bano**, Philipp Richter, Mobin Javed, Srikanth Sundaresan, Zakir Durumeric, Steven J. Murdoch, Richard Mortier and Vern Paxson. “Scanning the Internet for Liveness”. ACM SIGCOMM Computer Communication Review (CCR), Volume 48 Issue 2, April 2018.
- [C] Shweta Bhatt, Sagar Joglekar, **Shehar Bano** and Nishanth Sastry. “Illuminating the Ecosystem of Partisan Websites”. The World Wide Web Conference (WWW) Companion, 2018.
- [M] **Shehar Bano**, Mustafa Al-Bassam, George Danezis. “The Road to Scalable Blockchain Designs”. USENIX ;login: Magazine, Winter 2017, Vol. 42, No. 4 (;login: 2017).
- [C] Mustafa Al-Bassam, Alberto Sonnino, **Shehar Bano**, Dave Hrycyszyn and George Danezis. “Chainspace: A Sharded Smart Contracts Platform”. The Network and Distributed System Security Symposium (NDSS), 2018.
- [M] Hamed Haddadi, Rishab Nithyanand, **Sheharbano Khattak**, Mobin Javed, Narseo Vallina-Rodriguez, Marjan Falahrastegar, Julia E. Powles, Emiliano De Cristofaro, Steven J. Murdoch. “The Adblocking Tug-of-War”. USENIX ;login: Magazine, Winter 2016, Vol. 41, No. 4 (;login: 2016).
- [W] Rishab Nithyanand, **Sheharbano Khattak**, Mobin Javed, Narseo Vallina-Rodriguez, Marjan Falahrastegar, Julia E. Powles, Emiliano De Cristofaro, Hamed Haddadi and Steven J. Murdoch. “Ad-Blocking and Counter Blocking: A Slice of the Arms Race”. USENIX Workshop on Free and Open Communications on the Internet (FOCI), 2016.
- [C] **Sheharbano Khattak**, Tariq Elahi, Laurent Simon, Colleen Swanson, Steven J. Murdoch, Ian Goldberg. “SoK: Making Sense of Censorship Resistance Systems”. The Privacy Enhancing Technologies Symposium (PETS), Vol. 2016, No. 4, 2016.
- [C] **Sheharbano Khattak**, David Fifield, Sadia Afroz, Mobin Javed, Srikanth Sundaresan, Vern Paxson, Steven J. Murdoch, and Damon McCoy. “Do You See What I See? Differential Treatment of Anonymous Users”. The Network and Distributed System Security Symposium (NDSS), 2016.

- [J] **Sheharbano Khattak**, Zaafar Ahmed, Affan A. Syed and Syed Ali Khayam. “BotFlex: A community-driven tool for botnet detection”, Elsevier Journal of Network and Computer Applications, Volume 58, Dec’15, Pages 144-154.
- [T] **Sheharbano Khattak**, Laurent Simon, and Steven J. Murdoch. “Systemization of Pluggable Transports for Censorship Resistance”. arXiv preprint, Dec’14.
- [C] **Sheharbano Khattak**, Mobin Javed, Syed Ali Khayam, Zartash Afzal Uzmi and Vern Paxson. “A Look at the Consequences of Internet Censorship Through an ISP Lens”. ACM SIGCOMM Internet Measurement Conference (IMC), 2014.
- [P] **Sheharbano Khattak**, Zaafar Ahmed, Affan A. Syed and Syed Ali Khayam. “POSTER: BotFlex: A Community-driven Tool for Botnet Detection”, ACM International Conference on Computer and Communication Security (CCS), 2013.
- [J] **Sheharbano Khattak**, Naurin Rasheed Ramay, Kamran Riaz Khan, Affan A. Syed and Syed Ali Khayam. “A Taxonomy of Botnet Behavior, Detection and Defense”, IEEE Journal of Communications Surveys & Tutorials, Vol. PP, Issue 99, Oct’13, pp. 1 - 27.
- [W] **Sheharbano Khattak**, Mobin Javed, Philip D. Anderson and Vern Paxson. “Towards Illuminating a Censorship Monitor’s Model to Facilitate Evasion”, USENIX Workshop on Free and Open Communications on the Internet (FOCI), 2013.
- [P] Naurin Rasheed Ramay, **Sheharbano Khattak**, Affan A. Syed and Syed Ali Khayam. “POSTER: Bottleneck: A Generalized, Flexible, and Extensible Framework for Botnet Defense”, IEEE Symposium on Security and Privacy (S&P), 2012.

#### **Teaching Activities.**

- Guest Lecturer. “Introduction to Blockchains”, Undergraduate course “Network Security”, Lahore University of Management Sciences, Pakistan. May 2018
- Session Convener. “Blockchain” track, Master’s course “Computer Security: Current Applications and Research”, University of Cambridge. Mar 2018
- Guest Lecturer. “Internet Censorship, Circumvention and Measurement”, Master’s course “Privacy Enhancing Technologies”, University College London. Feb 2018
- Reading Group Convener. “Internet Measurement” (Jan 2018–Jun 2018), “Blockchains” (May 2017–Jun 2018), University College London
- Session Convener. “Censorship Resistance” track, Master’s course “Computer Security: Current Applications and Research”, University of Cambridge. Feb 2015, Feb 2016, Mar 2017
- Supervisor (small-group teaching). Undergraduate course “Operating Systems”, University of Cambridge. 2013

#### **Supervision Experience.**

- Informally supervised 5 students’ research work, all of which led to publications in top peer-reviewed venues: 2 Ph.D. students (University College London); 1 MSc student (King’s College London); and 2 undergraduate students (Foundation for Advancement of Science and Technology, Islamabad, Pakistan)

#### **Professional Service.**

- **Leadership**
  - *General & PC Co-chair*: Workshop on Security & Privacy on the Blockchain (co-located with IEEE Euro Security & Privacy) 2018
- **PC Member**
  - *Conferences*: Financial Cryptography and Data Security 2020, ACM Conference on Computer and Communications Security (CCS) 2018. ACM Symposium on Electronic Crime Research (eCrime) 2018. The Web Conference (WWW) 2018. Privacy Enhancing Technologies Symposium (PETS) 2017–19
  - *Workshops*: IEEE Workshop on Blockchain Technologies and Applications (BTA) 2018. USENIX Workshop on Free and Open Communications on the Internet (FOCI) 2017
- **Journal Reviews**
  - IEEE Pervasive Computing 2018. ACM Transactions on the Web (TWEB) 2018

## Policy / Media Engagement.

- **Policy Engagement**

- *Written Evidence:* The UK Parliament Communications Committee’s “The Internet: to regulate or not to regulate?” inquiry, Sep 2018

- **Media Engagement**

- *Media Coverage:* Coin Desk, The Morning Paper, The Register, ArsTechnica, PCWorld, The Next Web, heise.de, Naked Security, BuzzFeed, Cambridge TV
- *Media Citations:* BBC, Wired

## Professional Membership.

- **IC3—Initiative for Cryptocurrencies and Contracts:** A leading blockchain research organisation including Cornell University, Cornell Tech, EPFL, ETH Zurich, UC Berkeley, UCL, UIUC and the Technion
- **UCL Center for Blockchain Technologies:** An academic research center connecting expertise and drawing knowledge on blockchains from 8 UCL departments in science, engineering, humanities, and the arts
- **London Infosec:** Founder and steering committee member of the group (Over 90 members from 11 universities across the UK) to foster collaboration between UK academics working on information security
- **GradApp Lab:** Mentored 2 students in Pakistan applying to graduate schools abroad (accepted Ph.D. and Master’s CS offers from University of Southern California and University of Waterloo). 2015–16

## Invited Talks & Seminars.

- **Ethical Issues in Network Measurement**

- Carnegie Mellon University (Aug’18), University of Kent (Jun’18), University of Cambridge (May’18), University College London (Mar’18)

- **Coconut: Threshold Issuance Selective Disclosure Credentials**

- IRTF’s Decentralized Internet Infrastructure Research Group (DINRG) meeting at IETF 102 (Jul’18)

- **Chainspace—A Scalable Smart Contract Platform**

- Open Data Institute (May’18), University College London (Mar’18), IRTF’s Decentralized Internet Infrastructure Research Group (DINRG) meeting at IETF 101 (Mar’18)

- **Characterization of Internet Censorship from Multiple Perspectives**

- The Guardian (Jun’17), Imperial College London (Jun’17), University of Cambridge (May’17), Queen Mary University London (Apr’17), King’s College London (Mar’17), University College London (Mar’17)

- **Do You See What I See? Differential Treatment of Anonymous Users**

- Microsoft Research Cambridge (Apr’16), University College London, University of Cambridge (Feb’16)

- **A Look at the Consequences of Internet Censorship Through an ISP Lens**

- IRTF Workshop on Global Access to the Internet for All (Nov’15)

## References.

- Available on request