

# Arunesh Mathur

amathur@princeton.edu • <http://aruneshmathur.co.in> • @aruneshmathur

## EDUCATION

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Ph.D., Computer Science, Princeton University	2016–2020
Dissertation: <i>Identifying and measuring manipulative user interfaces at scale on the web</i> <b>Awarded the 2021 ACM SIGCHI Outstanding Dissertation Award</b>	
M.A., Computer Science, Princeton University	2016–2018
M.S., Human–Computer Interaction, University of Maryland, College Park	2014–2016
B.Tech., Computer Engineering, National Institute of Technology Karnataka, Surathkal	2008–2012

## EMPLOYMENT HISTORY

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Postdoctoral Research Fellow, Center for Information Technology Policy (CITP)	2020–2021
Research Intern, International Computer Science Institute (ICSI)	Summer 2016
Senior Member of Technical Staff, Oracle Corporation	2012–2014
Research Intern, Microsoft Research India	Summer 2011

## CONFERENCE AND JOURNAL PUBLICATIONS

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1. Kenneth L. Peng, [Arunesh Mathur](#), Arvind Narayanan  
*Mitigating dataset harms requires stewardship: Lessons from 1000 papers.*  
Neural Information Processing Systems Datasets and Benchmarks Track (NeurIPS 2021).
2. [Arunesh Mathur](#), Mihir Kshirsagar, Jonathan Mayer.  
*What Makes a Dark Pattern...Dark? Design Attributes, Normative Considerations, and Measurement Methods.*  
ACM Conference on Human Factors in Computing Systems (CHI) 2021.
3. Eyal Peer, Serge Egelman, Marian Harbach, Nathan Malkin, [Arunesh Mathur](#), Alisa Frik.  
*Nudge Me Right: Personalizing Online Nudges to People’s Decision-Making Styles.*  
Computers in Human Behavior (Volume 109), 2020.
4. Michael Swart, Ylana Lopez, [Arunesh Mathur](#), Marshini Chetty.  
*Is This An Ad?: Automatically Disclosing Online Endorsements On YouTube With AdIntuition.*  
ACM Conference on Human Factors in Computing Systems (CHI) 2020.
5. Hooman M. Moghaddam, Gunes Acar, [Arunesh Mathur](#), Danny Y. Huang, Ben Burgess, Prateek Mittal, Nick Feamster, Arvind Narayanan, Edward Felten.  
*Watching You Watch: The Tracking Ecosystem of Over-the-Top TV Streaming Devices.*  
ACM Conference on Computer and Communications Security (CCS) 2019.  
**Runner up for the Caspar Bowden Award for Outstanding Research in Privacy Enhancing Technologies.**
6. [Arunesh Mathur](#), Gunes Acar, Michael Friedman, Elena Lucherini, Jonathan Mayer, Marshini Chetty, Arvind Narayanan.  
*Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites.*  
ACM Computer Supported Collaborative Work and Social Computing (CSCW) 2019.  
**FPF Privacy Papers for Policy Makers Award.**

7. Frank Li, Lisa Rogers, Arunesh Mathur, Nathan Malkin, Marshini Chetty.  
*Keepers of the Machines: Examining How System Administrators Manage Software Updates For Multiple Machines.*  
USENIX Symposium on Usable Privacy and Security (SOUPS) 2019.  
**Distinguished Paper Award.**
8. Arunesh Mathur, Arvind Narayanan, Marshini Chetty.  
*Endorsements on Social Media: An Empirical Study of Affiliate Marketing Disclosures on YouTube and Pinterest.*  
ACM Computer Supported Collaborative Work and Social Computing (CSCW) 2018.  
**Best Paper Award.**
9. Arunesh Mathur, Jessica Vitak, Arvind Narayanan, Marshini Chetty.  
*Characterizing the Use of Browser-Based Blocking Extensions To Prevent Online Tracking.*  
USENIX Symposium on Usable Privacy and Security (SOUPS) 2018.
10. Noah Apthorpe, Yan Shvartzshnaider, Arunesh Mathur, Dillon Reisman, Nick Feamster.  
*Discovering IoT Smart Home Privacy Norms using Contextual Integrity.*  
ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT/UbiComp) 2018.
11. Arunesh Mathur and Marshini Chetty.  
*Impact of User Characteristics on Attitudes Towards Automatic Mobile Application Updates.*  
USENIX Symposium On Usable Privacy and Security (SOUPS) 2017.
12. Arunesh Mathur, Josefine Engel, Sonam Sobti, Victoria Chang, and Marshini Chetty.  
*“They Keep Coming Back Like Zombies”: Improving the User Experience of Software Updates.*  
USENIX Symposium On Usable Privacy and Security (SOUPS) 2016.
13. Arunesh Mathur, Brent Schlotfeldt, and Marshini Chetty.  
*A Mixed-Methods Study of Mobile Users’ Data Usage Practices in South Africa.*  
ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) 2015.

#### WORKSHOP PUBLICATIONS

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1. Arunesh Mathur, Arvind Narayanan, Marshini Chetty.  
*An Empirical Study of Affiliate Marketing Disclosures on YouTube and Pinterest.*  
IEEE Workshop on Technology and Consumer Protection (ConPro) 2018.
2. Arunesh Mathur, Nathan Malkin, Marian Harbach, Eyal Peer, and Serge Egelman.  
*Quantifying Users’ Beliefs about Software Updates.*  
NDSS Workshop on Usable Security (USEC) 2018.  
**Best Paper, People’s Choice.**
3. Nathan Malkin, Arunesh Mathur, Marian Harbach, and Serge Egelman.  
*Personalized Security Messaging: Nudges for Compliance with Browser Warnings.*  
IEEE European Workshop on Usable Security (EuroUSEC) 2017.
4. Arunesh Mathur, Harshal Choudhary, Priyank Vashist, William Thies, and Santhi Thilagam.  
*An Empirical Study of License Violations in Open Source Projects.*  
IEEE Software Engineering Workshop (SEW) 2012.

#### MAGAZINE PUBLICATIONS

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1. Arvind Narayanan, Arunesh Mathur, Marshini Chetty, Mihir Kshirsagar.  
*Dark Patterns: Past, Present, and Future.*  
ACM Queue, 2020.

## HONORS AND AWARDS

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| 1. ACM SIGCHI Outstanding Dissertation Award                                   | 2020             |
| 2. Consumer Reports Digital Lab fellowship – \$50,000                          | 2020             |
| 3. Best paper, USENIX SOUPS 2019   | 2019             |
| 4. Future of Privacy Forum, Privacy Papers for Policy Makers Award             | 2019             |
| 5. Best paper, ACM CSCW 2018   | 2018             |
| 6. Best paper people’s choice, USEC 2018                                       | 2018             |
| 7. USENIX SOUPS travel grant – \$1055  | 2017             |
| 8. ACM CHI Excellent Reviewer  | 2021, 2017, 2016 |
| 9. ACM CSCW Excellent Reviewer   | 2019             |
| 10. USENIX SOUPS travel grant – \$1195   | 2016             |
| 11. Outstanding Graduate Assistant Award, University of Maryland, College Park | 2015             |
| 12. Dean’s Fellowship, University of Maryland, College Park – \$5000           | 2014             |
| 13. Merit-based Fellowship, University of Maryland, College Park – \$2500      | 2014             |
| 14. Microsoft Research India travel grant – ₹75,000                            | 2012             |
| 15. Outstanding achievement in academics, Institute of Engineers [I.E.]        | 2010             |
| 16. Winner, <i>Kaun Banega Entrepreneur?</i> , The IndUS Entrepreneurs         | 2010             |

## TALKS AND PANELS

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| 1. Unravelling the web of manipulative and deceptive user interfaces<br>Invited Talk, <i>University College London Interaction Centre (UCLIC)</i>   | 2021 |
| 2. What Makes a Dark Pattern... Dark?: Design Attributes, Normative Considerations, and Measurement Methods<br>Invited Talk, <i>ACM CHI</i>   | 2021 |
| 3. Identifying and measuring manipulative user interfaces at scale on the web<br>Invited Talk, <i>ACM CHI</i>   | 2021 |
| 4. Dark Patterns: Definitions, Measurement, Policy<br>Invited Talk, <i>User Experience Office (UXO) at Princeton University</i>   | 2021 |
| 5. Dark Patterns: Definitions, Attributes, and Themes<br>Invited Panelist, <i>Bringing Dark Patterns to Light: A Federal Trade Commission (FTC) Workshop</i>  | 2021 |
| 6. Dark Patterns: Definitions, Types, Attributes<br>Invited Talk, <i>National Association of Attorneys General</i>  | 2021 |
| 7. What Makes a Dark Pattern... Dark?: Design Attributes, Normative Considerations, and Measurement Methods<br>Invited Panelist, <i>Roundtable on Dark Commercial Patterns Online by the Organisation for Economic Co-operation and Development (OECD) Committee on Consumer Policy (CCP)</i> | 2021 |
| 8. Dark Patterns: Definitions, Measurement, Policy<br>Invited Talk, <i>DuckDuckGo</i>   | 2020 |

9. Dark Patterns: Definitions and Policy 2020  
Invited Panelist, *Roundtable on Dark Commercial Patterns Online by the Organisation for Economic Co-operation and Development (OECD) Committee on Consumer Policy (CCP)*
10. Consumers and businesses in digital markets - An unequal relationship? 2020  
Invited Talk, *Swedish Consumer Agency*
11. Measuring for Consumer Protection at Scale 2020  
Invited Panelist, *IEEE Consumer Protection Workshop*
12. Weaponizing Behavioral Psychology in the Cyber Era 2020  
Invited Panelist, *Consumer Federation of America*
13. Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites 2020  
Invited Panelist, *Privacy Papers for Policymakers, Future of Privacy Forum, Washington, D.C.*
14. Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites 2019  
Invited Talk, *ACM CSCW, Austin, TX*
15. Dark Patterns: Definitions, Measurement, Policy 2019  
Invited Talk, *Federal Trade Commission (FTC), Washington, D.C.*
16. Endorsements on Social Media: An Empirical Study of Affiliate Marketing Disclosures on YouTube and Pinterest 2018  
Invited Talk, *ACM CSCW, Jersey City, NJ*
17. Characterizing the Use of Browser-Based Blocking Extensions to Prevent Online Tracking 2018  
Invited Talk, *USENIX SOUPS, Baltimore, MD*
18. An Empirical Study of Affiliate Marketing Disclosures on YouTube and Pinterest 2018  
Invited Talk, *IEEE Consumer Protection Workshop, San Francisco, CA*
19. An Introduction to Web Privacy 2018  
Invited Talk, *Princeton High School, Princeton, NJ*
20. Impact of User Characteristics on Attitudes Towards Automatic Mobile Application Updates 2017  
Invited Talk, *USENIX SOUPS, San Jose, CA*
21. Human-Computer Interaction Research at Princeton University 2017  
Invited Talk, *Princeton High School, Princeton, NJ*
22. Improving the User Experience of Software Updates 2016  
Invited Talk, *USENIX SOUPS, Denver, CO*
23. A Mixed-Methods Study of Mobile Users' Data Usage Practices in South Africa 2015  
Invited Talk, *ACM UbiComp, Osaka, Japan*
24. A Mixed-Methods Study of Mobile Users' Data Usage Practices in South Africa 2015  
Invited Talk, *32<sup>nd</sup> Human-Computer Interaction Lab (HCIL) Annual Symposium*
25. An Empirical Study of License Violations in Open Source Projects 2012  
Invited Talk, *IEEE Software Engineering Workshop, Heraklion, Greece*
26. OpenZIM: Offline Wikipedia for Low-Cost Phones 2011  
Invited Talk, *Software Freedom Day, NITK, Surathkal*

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#### SERVICE

1. Co-organizer, ACM CHI Workshop "What Can CHI Do About Dark Patterns?" 2021
2. Program Committee, IEEE ConPro Workshop 2021

3. Reviewer, ACM CHI	2022, 2021, 2018, 2017, 2016, 2015
4. Reviewer, PETS	2022, 2021, 2019, 2018
5. Reviewer, ACM CSCW	2021, 2019, 2018
6. Webmaster, IEEE ConPro Workshop	2020
7. Reviewer, Journal of Cybersecurity	2019
8. Program Committee, IEEE EuroUSEC Workshop	2019
9. Reviewer, USENIX SOUPS	2018
10. Poster Jury, USENIX SOUPS	2018
11. Program Committee, ACM CHI Workshop on Individual Differences in Privacy	2018
12. Program Committee, ACM CHI Late Breaking Work (LBW)	2018
13. Reviewer, ACM IMWUT	2017
14. Reviewer, ACM UbiComp	2015
15. Student Volunteer, WEIS	2016
16. Student Volunteer, ACM UbiComp	2015
17. Webmaster and Publicity Chair, ACM DEV-5	2014

#### TEACHING

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1. Teaching Assistant for Information Security (COS 432) Computer Science, Princeton University	Fall 2018
2. Teaching Assistant for Computer Networks (COS 461) Computer Science, Princeton University	Spring 2019

#### STUDENT ADVISING

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1. Kenneth Peng Undergraduate, Department of Mathematics, Princeton University	2020–2021
2. Kevin Feng Undergraduate, Department of Computer Science, Princeton University	2020–2021
3. Michael Swart Undergraduate, Department of Computer Science, Princeton University	2019–2020
4. Michael Friedman Undergraduate, Department of Computer Science, Princeton University	2018–2019

#### SELECT PRESS COVERAGE

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1. Deleting unethical data sets isn't good enough <i>MIT Technology Review</i>	2021
2. The Key to Getting People to Be Safer Online: Make the Appeals More Personal <i>The Wall Street Journal</i>	2021
3. Stopping the Manipulation Machines <i>The New York Times</i>	2021

4. Fundraising appeals are a plague on our politics. Here's why you should care. 2021  
*The Washington Post*
5. How to spot design traps like the "money bomb" Trump used to dupe supporters. 2021  
*Quartz*
6. Lawmakers Take Aim at Insidious Digital 'Dark Patterns' 2021  
*WIRED*
7. The ethical questions that haunt facial-recognition research 2020  
*Nature News*
8. All the President's spam 2020  
*ABC News*
9. Trump's campaign lures donors with absurd financial promises – and insults 2020  
*The Washington Post*
10. How Campaigns Use Manipulative Tricks to Convince You to Open Their Emails 2020  
*Fast Company*
11. Sale ending soon? How online stores trick you into buying 2020  
*The Associated Press*
12. How 'dark patterns' influence travel bookings 2019  
*The BBC*
13. Tricks Online Retailers Use to Get You to Spend More 2019  
*The Wall Street Journal*
14. They Know What You Watched Last Night 2019  
*The New York Times*
15. Why cord cutting is a privacy minefield 2019  
*Fast Company*
16. Smart TVs Are Data-collecting Machines, New Study Shows 2019  
*The Verge*
17. Your Smart TV Is Watching You 2019  
*Science Friday Podcast*
18. On Roku and Amazon Fire TV, Channels Are Watching You 2019  
*WIRED*
19. These are the shady tricks shopping sites use to get your money and info 2019  
*Quartz*
20. This Chrome Extension Calls Out Sponsored Youtube Videos 2019  
*WIRED*
21. Dark Patterns: the art of online deception Science Weekly podcast 2019  
*The Guardian*
22. How E-Commerce Sites Manipulate You Into Buying Things You May Not Want 2019  
*The New York Times*
23. PewDiePie and other vloggers fail to disclose adverts 2018  
*The Times*
24. YouTube and Pinterest Influencers Almost Never Disclose Marketing Relationships 2018  
*WIRED*

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|---|------|
| 25. Millions of YouTube product reviews may flout advertising rules<br><i>New Scientist</i>               | 2018 |
| 26. 90 percent of affiliate ads on YouTube and Pinterest aren't disclosed, says study<br><i>The Verge</i> | 2018 |
| 27. Enterprising Foursome<br><i>The Times of India</i>  | 2010 |