Anupam Das — Curriculum Vitae

Contact Information

North Carolina State University
Department of Computer Science
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Education

University of Illinois at Urbana-Champaign (UIUC), IL, USA

Ph.D. in Computer Science, 08/2010 – 06/2016

- Thesis Title: Understanding and Mitigating the Privacy Risks of Smartphone Sensor Fingerprinting
- Supervisor: Nikita Borisov

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

M.S. in Computer Science and Engineering, 04/2008 – 06/2010

- Thesis Title: Dynamic Trust Model for Multi-agent Systems
- Supervisor: Dr. M. Mahfuzul Islam

B.S. in Computer Science and Engineering, 02/2003 – 11/2007

- Senior Thesis Title: Evolution of Neural Network using Genetic Algorithm
- Supervisor: Dr. Md. Monirul Islam and Dr. Md. Shohrab Hossain

Academic Experience

- **Assistant Professor**
  North Carolina State University (NCSU) 01/2019–present
- **Postdoctoral Fellow**
  Carnegie Mellon University (CMU) 07/2016–07/2018
- **Research Assistant**
  University of Illinois at Urbana-Champaign (UIUC) 01/2011–06/2016
- **Assistant Professor**
  Bangladesh University of Engr. and Tech. (BUET) 04/2008–07/2010

Industry Experience

- **Research Intern**
  Google 01/2015 – 04/2015
- **Research Intern**
  VMware 05/2014 – 08/2014
- **Research Intern**
  DisruptDev (startup) 05/2013 – 08/2013
- **Research Intern**
  NEC Labs America 05/2012 – 08/2012

Research Grants

- Title: CRII: SaTC: Analyzing Information Leak in Smart Homes
  - ◇ NSF Award #: 1849997 ($174,995) [June 1, 2019 – May 31, 2021]
- Title: Understanding people's privacy perceptions, concerns and preferences in using Internet of Things (IoT) technologies
  - ◇ NCSU FRPD ($10,000) [July 1, 2019 – June 30, 2020]

Honors and Awards

- Fellowships
  - ◇ Finalist of 2015 *Symantec Research Lab Graduate Fellowship.*
  - ◇ *Fulbright Science and Technology* fellowship from 2010 – 2013.
- CS@Illinois Feng Chen Memorial award 2015.
- Best paper awards
  - ◇ ACM MMSys 2017
  - ◇ ASIACCS 2014
- Distinguished poster awards
  - ◇ SOUPS 2017
- Excellent TA award for Fall 2011 at UIUC.

Teaching Experience

Instructor, Department of Computer Science, NCSU

- CS 591 Privacy — Fall 2019
- CS 495/591 Privacy — Spring 2019

Guest Lecturer, School of Computer Science, CMU

- Information Security and Privacy — Fall 2016

Teaching Assistant, Department of Computer Science, UIUC

- CS 463 (Computer Security II), — Spring 2013
- CS 105 (Introduction to Computing), — Fall 2011

Lecturer, Department of Computer Science and Engineering, BUET

- CSE 321 (Computer Networks), — 05/2010
- CSE 209 (Digital Electronics and Pulse Techniques), — 10/2009
- CSE 409 (Computer Graphics), — 03/2009
- CSE 205 (Digital Logic Design), — 07/2008
- CSE 100 (Introduction to Computer Programming), — 04/2008

Cisco Regional Academy Instructor, BUET

- CNNA Exploration Module 1 to 4 — 05/2008–08/2010

Mentoring Experience

Mentored Graduate Students at CMU

- Daniel Smullen; Project: Privacy-aware IoT infrastructure — Fall 2017 – Fall 2018
- Aerin Zhang; Project: Notification preference study — Spring 2017 – Fall 2018
- Zheng Zong, Ludi Li; Project: Privacy-aware indoor location service — Fall 2016
- A. Shah, D. Shaji, T. Liu; Project: Privacy issues of facial recognition — Fall 2016

Mentor for Promoting Undergraduate Research in Engineering at UIUC

- Jacob Trueb, Qiuhua Ding; Project: Personalized security questions — Fall 2014
- Ziqiao Ding; Project: Bandwidth anomalies of Tor relays — Fall 2014

Mentored Undergraduate Students at UIUC

- Jacob Trueb, Qiuhua Ding; Project: Profiling users' app behavior — Spring 2015
- Edward Chou, Project: Mitigating motion sensors fingerprinting — Spring 2016

Patents

- FlowComb: Boosting Big Data Processing with OpenFlow
- Personalized Privacy Assistant

Trainings

- Cisco Certified Network Associate (CCNA), BUET 2008.
- Teachers' Appreciation Workshop, BUET 2009.

Publications

Google Scholar

Journals

1. J. Wang, B. Amos, **Anupam Das**, P. Pillai, N. Sadeh, and M. Satyanarayanan. Enabling live video analytics with a scalable and privacy-aware middleware. *ACM Transactions on Multimedia Computing, Communications and Applications (TOMM)*, 14(3s), 2018
2. **Anupam Das**, N. Borisov, and E. Chou. Every move you make: Exploring practical issues in smartphone motion sensor fingerprinting and countermeasures. In *Proceedings of the 18th Privacy Enhancing Technologies Symposium (PoPETs)*, pages 88–108, 2018
3. J. Juen, A. Johnson, **Anupam Das**, N. Borisov, and M. Caesar. Defending Tor from network adversaries: A case study of network path prediction. In *Proceedings of the 15th Privacy Enhancing Technologies Symposium (PoPETs)*, pages 171–187, 2015
4. **Anupam Das** and M. M. Islam. SecuredTrust: A dynamic trust computation model for secured communication in multiagent systems. *IEEE Transactions on Dependable and Secure Computing (TDSC)*, 9(2):261–274, 2012

Magazine Article

1. **Anupam Das**, M. Degeling, N. Sadeh, and D. Smullen. Personal privacy assistants for the Internet of Things. *IEEE Pervasive Computing*, 2018

Conference proceedings

1. **Anupam Das**, G. Acar, N. Borisov, and A. Pradeep. The Web's Sixth Sense: A Study of Scripts Accessing Smartphone Sensors. In *Proceedings of the 25th ACM Conference on Computer and Communications Security (CCS)*, 2018
2. W. Melicher, **Anupam Das**, M. Sharif, L. Bauer, and L. Jia. Riding out DOMsday: Towards detecting and preventing DOM cross-site scripting. In *Proceedings of the 25th Annual Network and Distributed System Security Symposium (NDSS)*, 2018
3. R. Tahir, M. Huzaifa, **Anupam Das**, M. Ahmad, C. Gunter, F. Zafar, M. Caesar, and N. Borisov. Mining on someone else's dime: Mitigating covert mining operations in clouds and enterprises. In *Proceedings of the 20th International Symposium on Research in Attacks, Intrusions and Defenses (RAID)*, 2017
4. J. Wang, B. Amos, **Anupam Das**, P. Pillai, N. Sadeh, and M. Satyanarayanan. A scalable and privacy-aware IoT service for live video analytics. In *Proceedings of the 8th ACM on Multimedia Systems Conference (MMSys)*, pages 38–49, 2017. (Best Paper Award)
5. S. Ji, S. Yang, **Anupam Das**, X. Hu, and R. Beyah. Password correlation: Quantification, evaluation and application. In *Proceedings of the 36th IEEE Annual International Conference on Computer Communications (INFOCOM)*, 2017
6. M. Surbatovich, J. Aljuraidan, L. Bauer, **Anupam Das**, and L. Jia. Some recipes can do more than spoil your appetite: Analyzing the security and privacy risks of IFTTT recipes. In *Proceedings of the 26th International World Wide Web Conference (WWW)*, pages 1501–1510, 2017
7. **Anupam Das**, N. Borisov, and M. Caesar. Tracking mobile web users through motion sensors: Attacks and defenses. In *Proceedings of the 23rd Annual Network and Distributed System Security Symposium (NDSS)*, 2016

8. **Anupam Das**, N. Borisov, and M. Caesar. Do you hear what I hear? Fingerprinting smart devices through embedded acoustic components. In *Proceedings of the 21st ACM Conference on Computer and Communications Security (CCS)*, pages 441–452, 2014
9. **Anupam Das**, N. Borisov, and M. Caesar. Analyzing an adaptive reputation metric for anonymity systems. In *Proceedings of the First ACM Symposium and Bootcamp on the Science of Security (HotSoS)*, pages 11:1–11:11, 2014
10. **Anupam Das**, N. Borisov, P. Mittal, and M. Caesar. Re^3: Relay reliability reputation for anonymity systems. In *Proceedings of the 9th ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, pages 63–74, 2014. (Best Paper Award)
11. **Anupam Das**, J. Bonneau, M. Caesar, N. Borisov, and X. Wang. The tangled web of password reuse. In *Proceedings of the 21st Annual Network and Distributed System Security Symposium (NDSS)*, 2014
12. **Anupam Das** and N. Borisov. Securing anonymous communication channels under the selective DoS attack. In *Proceedings of the 17th Financial Cryptography and Data Security (FC)*, pages 362–370, 2013
13. **Anupam Das**, M. M. Islam, and G. Sorwar. Dynamic trust model for reliable transactions in multi-agent systems. In *Proceedings of the 13th IEEE International Conference on Advanced Communication Technology (ICACT)*, pages 1101–1106, 2011
14. **Anupam Das** and M. M. Islam. A novel feedback based fast adaptive trust model for P2P networks. In *Proceedings of the 35th IEEE Conference on Local Computer Networks (LCN)*, pages 552–559, 2010
15. **Anupam Das** and S. M. Abdullah. Evolving multilayer neural networks using permutation free encoding technique. In *Proceedings of the 2009 International Conference on Artificial Intelligence (ICAI)*, pages 32–38, 2009
16. **Anupam Das**, M. Hossain, S. M. Abdullah, and R. U. Islam. Permutation free encoding technique for evolving neural networks. In *Proceedings of the 5th International Symposium on Neural Networks: Advances in Neural Networks (ISNN)*, pages 255–265, 2008

Workshop proceedings

1. **Anupam Das**, M. Degeling, X. Wang, J. Wang, N. Sadeh, and M. Satyanarayanan. Assisting users in a world full of cameras: A privacy-aware infrastructure for computer vision applications. In *Proceedings of the 30th IEEE Computer Vision and Pattern Recognition Workshops (CVPRW)*, pages 1387–1396, 2017. (selected for presentation at FTC PrivacyCon 2018)
2. P. Pappachan, M. Degeling, R. Yus, **Anupam Das**, S. Bhagavatula, W. Melicher, P. E. Naeini, S. Zhang, L. Bauer, A. Kobsa, S. Mehrotra, N. Sadeh, and N. Venkatasubramanian. Towards privacy-aware smart buildings: Capturing, communicating, and enforcing privacy policies and preferences. In *Proceedings of the 37th IEEE International Conference on Distributed Computing Systems Workshops (ICDCSW)*, pages 193–198, 2017
3. **Anupam Das**, C. Lumezanu, Y. Zhang, V. Singh, G. Jiang, and C. Yu. Transparent and flexible network management for big data processing in the cloud. In *Proceedings of the 5th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud)*, pages 1–6, 2013

Technical reports

1. **Anupam Das**, N. Borisov, E. Chou, and M. H. Mughees. Smartphone fingerprinting via motion sensors: Analyzing feasibility at large-scale and studying real usage patterns. *CoRR*, abs/1605.08763, 2016. http://arxiv.org/abs/1605.08763
2. **Anupam Das**, N. Borisov, and M. Caesar. Exploring ways to mitigate sensor-based smartphone fingerprinting. *CoRR*, abs/1503.01874, 2015. http://arxiv.org/abs/1503.01874
3. **Anupam Das**, N. Borisov, and M. Caesar. Fingerprinting smart devices through embedded acoustic components. *CoRR*, abs/1403.3366, 2014. http://arxiv.org/abs/1403.3366
4. **Anupam Das** and N. Borisov. Securing tor tunnels under the selective-DoS attack. *CoRR*, abs/1107.3863, 2011. http://arxiv.org/abs/1107.3863

Posters

1. N. Sadeh, M. Degeling, **Anupam Das**, A. S. Zhang, A. Acquisti, L. Bauer, L. Cranor, A. Datta, and D. Smullen. A privacy assistant for the Internet of Things. In *the 13th USENIX Symposium on Usable Privacy and Security (SOUPS)*, 2017. https://www.usenix.org/sites/default/files/soups17_poster_sadeh.pdf (Distinguished Poster Award)
2. **Anupam Das** and N. Borisov. Fingerprinting smartphones through speakers. In *the 35th IEEE Symposium on Security and Privacy (SP)*, 2014. http://www.ieee-security.org/TC/SP2014/posters/DASAN.pdf
3. G. T. K. Nguyen, X. Gong, **Anupam Das**, and N. Borisov. PnP: Improving web browsing performance over tor using web resource prefetch-and-push. In *the 20th ACM Conference on Computer and Communications Security (CCS)*, 2013. http://hatswitch.org/~nikita/papers/pnp-poster-ccs13.pdf

Theses

1. **Anupam Das**. *Understanding and Mitigating the Privacy Risks of Smartphone Sensor Fingerprinting.* Ph.D. thesis, Department of Computer Science, University of Illinois at Urbana-Champaign, 2016
2. **Anupam Das**. Feedback based dynamic trust model for secured communication in multi-agent systems. M.Sc. thesis, Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology, 2010
3. **Anupam Das**. Evolving neural networks using evolutionary algorithm. B.Sc. thesis, Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology, 2008

Conference Talks and Tutorials

Conference/Workshop Talk

- Assisting users in a world full of cameras: A privacy-aware infrastructure for computer vision applications. *The First International Workshop on The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security* (CV-COPS 2017), Honolulu, HI, USA, July 2017.
- Tracking mobile web users through motion sensors: Attacks and defenses. *The Network and Distributed System Security Symposium* (NDSS), San Diego, CA, USA, Feb. 2016.
- Do you hear what I hear? Fingerprinting smart devices through embedded acoustic

components. *ACM Conference on Computer and Communications Security* (CCS), Scottsdale, AZ, USA, Nov. 2014.

- Re^3: Relay reliability reputation for anonymity systems. *ACM Symposium on Information, Computer and Communications Security* (ASIACCS), Kyoto, Japan, June 2014.
- Analyzing an adaptive reputation metric for anonymity systems. *ACM Symposium and Bootcamp on the Science of Security* (HotSoS), Raleigh, NC, USA, Apr. 2014.
- The tangled web of password reuse. *The Network and Distributed System Security Symposium* (NDSS), San Diego, CA, USA, Feb. 2014.
- Securing anonymous communication channels under the selective-DoS attack. *Financial Cryptography and Data Security* (FC), Okinawa, Japan, Apr. 2013.
- A novel feedback based fast adaptive trust model for P2P networks. *IEEE Conference on Local Computer Networks* (LCN), Denver, CO, USA, Oct. 2010.

Tutorial

- An overview of usable privacy technologies, tools and findings coming out of recent research at Carnegie Mellon University. *USENIX Symposium on Usable Privacy and Security* (SOUPS), Santa Clara, CA, USA, July 2017.

Invited Talks

Tracking mobile web users through motion sensors: Attacks and defenses

- Keynote speech at the 5th ACM IH&MMSec — Jun. 2017
- Carnegie Mellon University, Host: Norman Sadeh — Oct. 2016
- UC Berkeley, Host: Grant Ho — Feb. 2016
- IBM T.J. Watson Research Center, Host: Ian Molloy — Feb. 2016
- Cornell University, Host: Elaine Shi — Jan. 2016
- UIUC, Host: Romit Roy Choudhury — Oct. 2015

Media/Online Coverage

- The Web's Sixth Sense: A Study of Scripts Accessing Smartphone Sensors
  - ◇ Wired
- Some recipes can do more than spoil your appetite: Analyzing the security and privacy risks of IFTTT recipes
  - ◇ CyLab News
- Smartphone fingerprinting via motion sensors: Analyzing feasibility at large-scale and studying real usage patterns
  - ◇ Motherboard ◇ ECE Newroom, UIUC
- The tangled web of password reuse
  - ◇ ZDNet ◇ FastCompany
- Defending Tor from network adversaries: A case study of network path prediction
  - ◇ Tor Weekly News, October 15th, 2014

Professional Services

- **Program Co-chair**: ACM MMSys '18 Special session on IoT and Smart cites
- **Program Committee Member**: CCS '17, WWW '18, CV-COPS '18, WPES '19, PoPETS '19
- **Invited Reviewer**: IEEE Pervasive Computing '18, ACM TOPS '17, ACM TWEB '17, IEEE TIFS '17-18, Elsevier PMC '15, IEEE TDSC '13
- **External Conference Reviewer**: CHI '18, USENIX '17, IEEE S&P '17, SOUPS '17, USENIX '16, CCS '15, CCS '14, SigComm '14, NDSS '12, CCS '12, CCS '11, IEEE

LCN '10, GECCO '09

- **Organizing Committee Member**: WALCOM 2010
- **Consultancy**: Bureau of Research, Testing and Consultation, BUET 2008 – 2010