

Mahimna Kelkar

🏠 cs.cornell.edu/~mahimna

Education

Cornell University

Aug 2018 - Present

Ph.D. in Computer Science

Research Areas: Theoretical and Applied Cryptography, Security

Committee - Ari Juels(Chair), Rafael Pass, Thomas Ristenpart

Purdue University

Aug 2015 - May 2018

Bachelor of Science in Computer Science, Mathematics, and Statistics

GPA: 4.0

Graduated Honors with Highest Distinction

Advised by Aniket Kate and Elias Bareinboim

Publications and Preprints

- [1] **Mahimna Kelkar**, Fan Zhang, Steven Goldfeder, and Ari Juels. “Order-Fairness for Byzantine Consensus”. <https://ia.cr/2020/269>. In Submission. 2020.
- [2] Duc V. Le, **Mahimna Kelkar**, and Aniket Kate. “Flexible Signatures: Making Authentication Suitable for Real-Time Environments”. In: *24th European Symposium on Research in Computer Security (ESORICS)*. 2019, pp. 173–193.

Manuscripts and Posters

- [3] **Mahimna Kelkar**. “Regret in Causal Inference and Decision Theory”. Honors Project (supervised by Elias Bareinboim). 2017.
- [4] Apurva Gandhi*, **Mahimna Kelkar***, Joey Ingram, and Shawn Martin. *Sequence Embeddings using LSTM Networks: Applications to Cyber Security*. Poster (at Sandia Labs). 2018.
- [5] Aniket Kate, **Mahimna Kelkar**, Donghang Lu, Easwar Vivek Mangipudi, Pedro Monero-Sanchez, and Krutarth Rao. *DUST-BT: Preventing Supply Chain Tampering using Blockchain Technology*. Poster. **Best Poster Award (Second Place)** at CERIAS Symposium. 2017.

Honors

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| 2019 | 1st Place (Prize: 3 ETH, 500 LINK) , IC3 Bootcamp Hackathon |
| 2018 | Mu Sigma Rho Outstanding Statistics Student , Purdue University |
| 2015-2018 | Dean’s List and Semester Honors , Purdue University |
| 2017 | 2nd Place - 84.51° Data Challenge , BoilerMake IV Hackathon |
| 2015 | Best Rookie Hack , BoilerMake III Hackathon |
| 2015 | Inspire Scholarship , Government of India |
| 2014 | Indian National Mathematics Olympiad Scholar , Government of India |
| 2013 | National Talent Search Scholarship , Government of India |

Research Experience

Cornell University

Fall 2018 - Present

Graduate Research Assistant (Cryptography)

Freedom Lab at Purdue (with Aniket Kate)

Summer 2016 - Spring 2018

Undergraduate Research Assistant (Cryptography)

- Blockchain for Supply Chain. Joint project with Ford on the use of blockchains to prevent counterfeiting in their supply chain.
- Flexible Signatures. Generalized signatures for IoT devices that provide a confidence level for the validity rather than just a binary output. Paper published at **ESORICS 2019**
- cMix. Highly scalable mix-networks that minimized expensive public key operations.

Causal AI Lab at Purdue (with Elias Bareinboim)

Fall 2017 - Spring 2018

Undergraduate Research Assistant (Causal Inference)

- Regret Decision Theory. Formalized a decision criterion based on counterfactual regret and proved the representation theorem necessary to cement it as a decision *theory*

Work Experience

Sandia National Laboratories

Summer 2018

Research Intern

Albuquerque, NM

- Worked on applications of Unsupervised Deep Learning using LSTM networks for intrusion detection in honeypots and for detection malicious source code.
- Presented a poster on the work at an internal Sandia conference.

Amazon.com

Summer 2017

Software Engineering Intern

Seattle, WA

- SDE Intern on the Amazon Web Services (AWS) Lambda Compute Team
- Developed operational tools to enable developers to analyze the root cause of problems in finer detail
- Increased efficiency compared to existing tools by 2000 % with a 10x data scalability potential.

Purdue Envision Center, Security Engineer

Spring 2018

FlightProfiler LLC, Chief Technology Officer

Spring 2016 - Spring 2018

Teaching Experience

Spring 2019 **Head Grad TA**, Blockchains, Cryptocurrencies, and Smart Contracts (Cornell)

Fall 2018 **Head Grad TA**, Discrete Structures (Cornell)

2017-2018 **Undergraduate TA**, Systems Programming (Purdue)

2016-2018 **Independent Tutor**, Several CS and Math Courses (Purdue)

Invited Talks

IC3 FALL RETREAT, *Retrospectively Accurate Time (Ongoing Project)*, Nov 2019

Academic Service

Shadow Program Committee	IEEE Symposium on Security and Privacy (IEEE S&P) 2020
External Reviewer	FC 2020, CRYPTO 2020
Organizer	Security and Privacy Discussion Group (SecDG) at Cornell
Student Reviewer	Cornell CS Ph.D. Admissions 2019, 2020
Student Volunteer	Cornell CS Ph.D. Visit Day 2019, 2020