

# Palak Jain

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Hi! I'm Palak. I'm a fourth year PhD student in Theoretical Computer Science at Boston University. My research uses the lenses of cryptography and differential privacy to design privacy-respecting systems and understand the downstream effects of those technologies on the individuals they intend to protect.

## EDUCATION

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### **Boston University**

*4th year PhD student*

- Advisor: Adam Smith
- Topics: Cryptography, Differential Privacy

Sep 2019 - now

*Boston, MA, USA*

### **Reed College**

*Bachelor of Arts (B.A.)*

- GPA in computer science: 3.8
- Commendation for Academic Excellence (2017-2018)
- Senior Thesis: Oblivious Data Structures

Aug 2014 - May 2018

*Portland, OR, USA*

## PUBLICATIONS

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### **The Price of Differential Privacy under Continual Observation [paper link]**

*Palak Jain, Sofya Raskhodnikova, Satchit Sivakumar, Adam Smith*

TPDP 2022

### **Universally Composable End-to-End Secure Messaging [paper link]**

*Ran Canetti, Palak Jain, Marika Swanberg, Mayank Varia*

CRYPTO 2022

## TALKS

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### **Spotlight talk at TPDP 2022 [talk link]**

*On joint work with Sofya Raskhodnikova, Satchit Sivakumar, Adam Smith [paper]*

### **Paper presentation at CRYPTO 2022 [talk link]**

*On joint work with Ran Canetti, Marika Swanberg, Mayank Varia [paper]*

### **Lightning talk at the 2nd ACM Symposium on Computer Science and Law [talk link]**

*On joint work with Ero Balsa and Helen Nissenbaum*

## (RECENT) AWARDS, GRANTS, FELLOWSHIPS

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### **(Grant) Boston University Center for Antiracist Research**

2021- 2022

- Project: Evaluate the potential 'harms' and 'utility' of differentially private disclosure of information as compared to that of other means of protecting the privacy of data.

### **CS Excellence Award for Teaching at Boston University**

Spring 2021

### **Chair's Fellowship at Boston University**

2019-2024

## TECHNICAL SKILLS

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**Theoretical Frameworks:** Differential Privacy, Universal Composability, Continual Observation Model of Differential Privacy, Shuffle Model of Differential Privacy, Multicalibration, Contextual Integrity, Secure Messaging, Game Theoretic/Rational Adversaries

**Languages:**  $\text{\LaTeX}$ , R, Python, C, ReactJS, css, html5

**Applications:** Microsoft Excel, Adobe Photoshop, Adobe Illustrator, Adobe XD, Github

## PROFESSIONAL SERVICE

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**Co-Organized the Boston University Algorithms and Theory Seminar** 2022-current

*Student Organizer*

**Co-Founder of the Boston Area Differential Privacy Student Reading Group** 2021

*Co-Founder*

- Jointly established and organized a Boston area differential privacy reading group with members from Boston University and Northeastern University.

### Reviews:

- **ICML** 2023
- **NeurIPS** 2022

### Subreviews:

- **ICALP** 2023
- **TCC** 2022
- **Asiacrypt** 2022
- **ALT** 2022
- **Usenix** 2021
- **CSF** 2020
- **IEEE S&P Shadow PC** 2020

## OUTREACH AND MENTORING

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**Civic Tech Hackathon** Feb 2023

*Invited Mentor*

- This hackathon, hosted by Tech for Change, aims to bring together undergraduate and graduate students across the U.S. who are interested in the intersections of government/policy and computer programming.

**Social Coordinator: Boston University TCS** Fall 2023

*Social Coordinator*

- Coordinated weekly social events for the Boston University Theoretical Computer Science research group. Each event had an attendance of 15-20 people.

## TEACHING

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**Network Security (Teaching Fellow)** Spring 2021, 2022, 2023

*Recipient of the **CS Excellence Award for Teaching** for this course*

- Instructor of Record: Gabriel Kaptchuk
- Assisted in revamping the entire course during the first fully hybrid semester of the pandemic.
- Designed and taught the course modules on cryptography review and on Signal's secure messaging protocol.
- Designed and taught weekly lab sessions .
- Lead the grading efforts with the help of 3 undergraduate graders.
- Enrollment of over 50 students during hybrid semesters and over 80 students during the subsequent semester.

## COURSEWORK

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**The Inclusive STEM Teaching Project** 2021

*Professional Development Course by Boston University + EdX*

### Graduate Courses

*Course pages are hyperlinked below.*

- Mathematical Methods for TCS: Boolean Functions, Pseudorandomness, Spectral Graph Theory, Coding Theory.
- Privacy in Statistics and Machine Learning
- Network Security
- Seeing The Invisible: Cryptography, Society and Beyond.
- Design and Analysis of Randomized Algorithms (textbook by Michael Mitzenmacher & Eli Upfal)
- Advanced Cryptography: Multiparty Computation
- Applied Cryptography
- Complexity Theory (textbook by Sanjeev Arora & Boaz Barak)
- Formal Methods in Security and Privacy
- Graduate Networks

## INDUSTRY EXPERIENCE

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### **Tinystep**

*Front End Developer*

- Lead frontend developer for an app for teachers at Klay prep schools across India.

Feb 2019 – Jun 2019

*Bengaluru, KA, India*

### **Go India Games**

*Gameplay Engineer, Playtesting Lead*

- Organized sample playtests for various boards games to develop an intuition for how customers interact with instruction manuals.
- Worked closely with the game developers to write game instructions and check consistency of game rules for Bharata 600 BC.
- Organized the playtesting efforts for the board game Bharata 600 BC.

Nov 2018 – Oct 2019

*Bengaluru, KA, India*

### **Reed Research Reactor**

*Licensed Reactor Operator, Training Program Mentor*

- Licensed by the United States Nuclear Regulatory Commission following a year long training program.
- Conducted experiments with neutron activation analysis.
- Calibrated and performed maintenance on facility equipment and components.
- Conducted routine safety inspections and record keeping.
- Gave public tours.
- Trained reactor license candidates.

Aug 2015 – May 2018

*Portland, OR, USA*

## (PAST) AWARDS, GRANTS, FELLOWSHIPS

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**Reed College Science Research Fellowship**

May 2017 – Aug 2017

**Reed College Mathematics Travel Fellowship**

2017

**Reed College Science Research Fellowship**

May 2016 – Aug 2016

**Davis United World College (UWC) Scholars Program**

2014- 2018