

# Matheus Venturyne Xavier Ferreira

## PERSONAL DATA

OCTOBER 1, 2022

ADDRESS: 5.420 Science and Engineering Complex, 150 Western Ave, Boston, MA 02134  
EMAIL: [matheus@seas.harvard.edu](mailto:matheus@seas.harvard.edu)  
WEBPAGE: <http://matheusvxf.github.io/>

## RESEARCH INTERESTS

Market Design, Game Theory, Cryptography, Security

## EDUCATION

**Princeton University** Princeton, NJ, USA  
Doctor of Philosophy in COMPUTER SCIENCE 2022  
Master of Arts in COMPUTER SCIENCE 2018  
Thesis: *Economics and Computation in Decentralized Systems*  
Advisor: S. Matthew Weinberg

**Universidade Federal de Itajubá** Itabira, MG, Brazil  
B.S. with Honors in COMPUTER ENGINEERING 2016

**University of California, San Diego** San Diego, CA, USA  
Exchange student fully funded by a [BSMP Fellowship](#) 2014

## WORK EXPERIENCE

**Harvard University** Boston, MA, USA  
Postdoctoral Fellow in COMPUTER SCIENCE 2021 - Present  
Fellow in COMPUTER SCIENCE Summer 2020

**Broadcom Corporation** San Diego, CA, USA  
SOFTWARE DEVELOPMENT ENGINEER INTERN IN BLUETOOTH/NFC Summer 2014

## SELECTED HONORS AND AWARDS

- RIT's Future Faculty Career Exploration Program 2022
- [SEAS Award for Excellence](#), Princeton School of Engineering and Applied Sciences 2020
- [LATinE Fellow](#), Purdue University College of Engineering 2020
- [2020 CRA-WP Grad Cohort for URMD](#), CRA 2020
- Dean's Grant, Princeton University Graduate School 2016 - 2021
- First Year Fellowship in Engineering, Princeton University 2016
- Congratulations from Higher Counsel, Universidade Federal de Itajubá 2016
- [Motion of Applause](#), Municipal Chamber of Itabira 2016
- [CNS Espresso Prize for Excellence in Networking](#), University of California, San Diego 2014
- 1<sup>st</sup> place in 2nd Line Follower Robot Competition, Universidade Federal de Itajubá [[Video](#)] 2013

## PUBLICATIONS (AUTHORS IN ALPHABETICAL ORDER)

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- Matheus V. X. Ferreira and David C. Parkes. Credible decentralized exchange design via verifiable sequencing rules. In *Submission*, 2022
- Matheus V. X. Ferreira, Ye Lin Sally Hahn, S. Matthew Weinberg, and Catherine Yu. Optimal strategic mining against cryptographic self-selection in proof-of-stake. In *Proceedings of the 23rd ACM Conference on Economics and Computation*, EC '22, page 89–114, New York, NY, USA, 2022. Association for Computing Machinery
- Meryem Essaidi, Matheus V. X. Ferreira, and S. Matthew Weinberg. Credible, Strategyproof, Optimal, and Bounded Expected-Round Single-Item Auctions for All Distributions. In Mark Braverman, editor, *13th Innovations in Theoretical Computer Science Conference (ITCS 2022)*, volume 215 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 66:1–66:19, Dagstuhl, Germany, 2022. Schloss Dagstuhl – Leibniz-Zentrum für Informatik
- Matheus V. X. Ferreira, Daniel J. Moroz, David C. Parkes, and Mitchell Stern. Dynamic posted-price mechanisms for the blockchain transaction-fee market. In *Proceedings of the 3rd ACM Conference on Advances in Financial Technologies*, AFT '21, page 86–99, New York, NY, USA, 2021. Association for Computing Machinery
- Matheus V. X. Ferreira and S. Matthew Weinberg. Proof-of-stake mining games with perfect randomness. In *Proceedings of the 22nd ACM Conference on Economics and Computation*, EC '21, page 433–453, New York, NY, USA, 2021. Association for Computing Machinery
- Matheus V. X. Ferreira and S. Matthew Weinberg. Credible, truthful, and two-round (optimal) auctions via cryptographic commitments. In *Proceedings of the 21st ACM Conference on Economics and Computation*, EC '20, page 683–712, New York, NY, USA, 2020. Association for Computing Machinery
- Tithi Chattopadhyay, Nick Feamster, Matheus V. X. Ferreira, Danny Yuxing Huang, and S. Matthew Weinberg. Selling a single item with negative externalities. In *The World Wide Web Conference*, WWW '19, page 196–206, New York, NY, USA, 2019. Association for Computing Machinery

## TEACHING

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### Princeton University - Teaching Assistant

Spring 2020	Junior Independent Work (COS 398)
Spring 2018	Economics and Computation (COS 445)
Fall 2017	Computation Geometry (COS 451)

### Universidade Federal de Itajuba - Teaching Assistant

2015	Computer Security
2013	Objected-Oriented Programming (ECO 30)

## SERVICE

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### Program Committee.

The Web Conference: Economics, Monetization, and Online Markets Track (WWW)	2023
International Conference on Blockchain Economics, Security and Protocols (Tokenomics)	2022
Web and Internet Economics (WINE)	2022
ACM Advances in Financial Technologies (AFT)	2022
International Conference on Mathematical Research for Blockchain Economy (MARBLE)	2022
Global Challenges in Economics and Computation	2020

### Journal Reviewer.

Journal of Cryptoeconomic Systems	2020, 2021
Games and Economic Behavior	2020

### Conference Reviewer.

Symposium on Theory of Computing (STOC)	2022
ACM-SIAM Symposium on Discrete Algorithms (SODA)	2022
ACM Economics and Computation (EC)	2021
USENIX Security	2021
ACM Advances in Financial Technologies (AFT)	2020

## UNDERGRADUATE STUDENTS MENTORING

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- Hannah Huh. *Princeton University*. Now at Citadel Feb-2022-May 2022  
Title: *Computing Optimal Strategies for Cryptographic Self-Selection Games*
- Anthony Hein. *Princeton University* Sept 2021-May 2022  
Title: *Searching for Optimal Strategies in Proof-of-Stake Mining Games with Access to External Randomness*  
**Outstanding Computer Science Senior Thesis Prize**
- Michelle Woo. *Princeton University*. Now at Radix Trading LLC Fall 2020-May 2021  
Title: *Computing optimal selfish mining strategies for Proof-of-Stake blockchains via MDPs*
- Catherine Yu. *Princeton University*. Now at Stripe June 2020-May 2022  
Title: *Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake*  
**Published at ACM EC 2022**
- Tinashe Handina. *Princeton University*. Now Ph.D. student at Caltech June 2020-May 2021  
Title: *A Random walk in Extensive Form Games: An Investigation into information, strategy-proofness and Credibility*

## DIVERSITY, INCLUSION & OUTREACH

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- Member, Computer Science Ad Hoc Committee, Princeton University 2021
- Mentor, Algorithmic Game Theory Mentoring Workshop (AMW), SIGECOM 2020 - 2022
- Peer Mentor, [Graduate Scholars Program](#), Princeton University 2019 - 2021
- Peer Educator, [LGBTQIA Peer Ed Program](#), Whitman College, Princeton University 2019 - 2020
- Mentor, [Princeton Summer Programming Experience](#), Princeton University 2017
- Mentor, [Princeton Women in Computer Science](#), Princeton University 2016 - 2017

## TALKS

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1. **Fall 2022 SIGecom Seminar Series**  
November 4, 2022  
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
2. **INFORMS Annual Meeting**  
October 16-19, 2022, Indianapolis  
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
3. **RIT's Future Faculty Career Exploration Program**  
Rochester, September 21-24, 2022  
Economics and Computation in Distributed Systems
4. **23rd ACM Conference on Economics and Computation**  
Boulder, CO, July 11-15, 2022  
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
5. **Crypto Monthly**  
Ripple Labs, June 21, 2022  
Economics and Computation in Distributed Systems
6. **[Harvard Theory of Computation Seminar](#)**  
Harvard University, February, 2022  
Proof-of-Stake Mining Games with Perfect Randomness
7. **Spotlights Beyond WINE, The 17th Conference on Web and Internet Economics**  
December 2021  
Proof-of-Stake Mining Games with Perfect Randomness

8. **3rd ACM Conference on Advances in Financial Technologies** [Video]  
September 26-28, 2021  
Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market
9. **16th Workshop on the Economics of Networks, Systems and Computation**  
July 23, 2021  
Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market
10. **22nd ACM Conference on Economics and Computation** [Video]  
July 2021  
Proof-of-Stake Mining Games with Perfect Randomness
11. **Princeton University Research Day** [Video]  
Princeton University, May 2021  
Proof-of-Stake Mining Games with Perfect Randomness
12. **Princeton Theory of Computation Day**  
Princeton University, April 2021  
Proof-of-Stake Mining Games with Perfect Randomness
13. **Microsoft Research, Algorithms Group**  
Redmond, CA, March 2021  
Economics and computation in Distributed Systems
14. **René Carmona's Group**  
Princeton University, March 2021  
Algorithms, game theory and blockchains
15. **INFORMS Annual Meeting**  
November 2020  
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
16. **21st ACM Conference on Economics and Computation** [Video]  
July 2020  
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
17. **Princeton University Research Day** [Video]  
Princeton University, May 2020  
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
18. **Princeton Theory of Computation Day**  
Princeton University, June 2019  
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
19. **Princeton Mechanism Design Seminar**  
Princeton University, June 2017  
Selling a Single Item with Negative Externalities: To Regulate Production or Payments?

## REFERENCES

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### **S. Matthew Weinberg**

Assistant Professor of Computer Science at Princeton University  
[smweinberg@princeton.edu](mailto:smweinberg@princeton.edu)

### **David C. Parkes**

George F. Colony Professor of Computer Science at Harvard University  
[parkes@eecs.harvard.edu](mailto:parkes@eecs.harvard.edu)

### **Tim Roughgarden**

Professor of Computer Science at Columbia University  
Head of Research a16z crypto  
[tim.roughgarden@gmail.com](mailto:tim.roughgarden@gmail.com)