

Matheus Venturyne Xavier Ferreira

PERSONAL DATA

MARCH 1, 2023

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

RESEARCH INTERESTS

Artificial Intelligence, Algorithmic Economics, 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 2022 - 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

- Future Faculty Career Exploration Program, Rochester Institute of Technology 2022
- Spotlight Beyond WINE, The 17th Conference on Web and Internet Economics 2021
- SEAS Award for Excellence, Princeton School of Engineering and Applied Sciences 2020
- LATInE Fellow, Purdue University College of Engineering 2020
- Winning Presentation, Princeton Research Day, Princeton University 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
- 1st place in 2nd Line Follower Robot Competition, Unifei [Video] 2013

PUBLICATIONS (AUTHORS IN ALPHABETICAL ORDER)

- Tarun Chitra, Matheus V. X. Ferreira, and Kshitij Kulkarni. Credible, optimal auctions via blockchains. *In submission*, 2023
- Kshitij Kulkarni, Matheus V. X. Ferreira, and Tarun Chitra. Credibility and incentives in gradual dutch auctions. *In submission*, 2023
- Matheus V. X. Ferreira and David C. Parkes. Credible decentralized exchange design via verifiable sequencing rules. *In To appear at Proceedings of the 55th Annual ACM Symposium on Theory of Computing, STOC '23*, 2023
- 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*, 2022
- Meryem Essaidi, Matheus V. X. Ferreira, and S. Matthew Weinberg. Credible, strategyproof, optimal, and bounded expected-round single-item auctions for all distributions. *In Proceedings of the 13th Innovations in Theoretical Computer Science Conference, ITCS '22*, 2022
- 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*, 2021
- 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*, 2021
- 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*, 2020
- 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*, 2019

TEACHING

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

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

SERVICE

Program Committee.

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|---|------|
| ACM Economics and Computation (EC) | 2023 |
| The Web Conference: Economics, Monetization, and Online Markets (WWW) | 2023 |
| International Conference on Mathematical Research for Blockchain Economy (MARBLE) | 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.

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| Distributed Ledger Technologies | 2023 |
| International Economic Review | 2023 |
| Transactions on Economics and Computation | 2022 |
| Journal of Cryptoeconomic Systems | 2021 |
| Games and Economic Behavior | 2020 |

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| Journal of Cryptoeconomic Systems | 2020 |
| Conference External 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 |
| Innovations in Theoretical Computer Science (ITCS) | 2019, 2020, 2022 |
| Web and Internet Economics (WINE) | 2018, 2019, 2020 |

UNDERGRADUATE STUDENTS MENTORING

- 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

- Member, Computer Science Ad Hoc Committee, Princeton University 2021
- Panelist, CS Advisory Council: Grad student panel, Princeton Computer Science August 2021
- Panelist, Pathways to Graduate School, Princeton School of Engineering August 2021
- Panelist, Pathways to Graduate School, Princeton School of Engineering August 2020
- Panelist, Princeton Prospective PhD Preview (P3), Princeton Graduate School October 2020
- Mentor, Algorithmic Game Theory Mentoring Workshop (AMW), SIGecom 2020, 2021, 2022
- Peer Mentor, Graduate Scholars Program (GSP), Princeton University 2019, 2020, 2021
- Graduate student faculty hiring committee, Princeton Computer Science 2019
- LGBTQIA Peer Educator, 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

1. Department of Computer Science, Tufts University
Medford, MA, February 28 and March 1, 2023
Transparency and Security via Algorithmic Economics
2. The University of Sydney, School of Computer Science
Sydney, Australia, February 20, 2023
Transparency and Security via Algorithmic Economics

3. CMU Crypto Seminar
Carnegie Mellon University, Pittsburgh PA, February 16, 2023
Transparency and Security via Algorithmic Economics
4. Tokenomics, 2022
Sorbonne Université, France, December 12-13, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules
5. Harvard EconCS Seminar
Harvard University, MA, November 4, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules
6. Fall 2022 SIGecom Seminar Series
SIGecom, November 4, 2022
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
7. Crypto Economics Security Conference
UC Berkeley, October 31-November 1, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules
8. INFORMS Annual Meeting
Indianapolis, IN, October 16-19, 2022
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
9. **RIT's Future Faculty Career Exploration Program**
Rochester Institute of Technology, NY, September 21-24, 2022
Economics and Computation in Distributed Systems
10. 23rd ACM Conference on Economics and Computation [Video]
University of Colorado, Boulder, CO, July 11-15, 2022
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake
11. Crypto Monthly
Ripple Labs, June 21, 2022
Economics and Computation in Distributed Systems
12. Harvard Theory of Computation Seminar
Harvard University, February 11, 2022
Proof-of-Stake Mining Games with Perfect Randomness
13. **Spotlights Beyond WINE**, The 17th Conference on Web and Internet Economics [Video]
December 15, 2021
Proof-of-Stake Mining Games with Perfect Randomness
14. 3rd ACM Conference on Advances in Financial Technologies [Video]
September 26-28, 2021
Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market
15. 16th Workshop on the Economics of Networks, Systems and Computation
July 23, 2021
Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market
16. 22nd ACM Conference on Economics and Computation [Video]
July 22, 2021
Proof-of-Stake Mining Games with Perfect Randomness
17. Princeton University Research Day [Video]
Princeton University, May 2021
Proof-of-Stake Mining Games with Perfect Randomness
18. Princeton Theory of Computation Day
Princeton University, April 2021
Proof-of-Stake Mining Games with Perfect Randomness

19. Microsoft Research, Algorithms Group
Redmond, WA, March 10, 2021
Economics and computation in Distributed Systems
20. René Carmona's Group
Princeton University, NJ, March 2021
Algorithms, game theory and blockchains
21. INFORMS Annual Meeting
November 2020
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
22. 21st ACM Conference on Economics and Computation [Video]
July 2020
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
23. **Winning Presentation**, Princeton Research Day [Video]
Princeton University, NJ, May 5, 2020
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
24. Princeton Theory of Computation Day
Princeton University, NJ, June 2019
Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments
25. Princeton Mechanism Design Seminar
Princeton University, NJ, June 2017
Selling a Single Item with Negative Externalities: To Regulate Production or Payments?

REFERENCES

Professor S. Matthew Weinberg

Department of Computer Science
Princeton University
35 Olden Street
Princeton, NJ 08544
smweinberg@princeton.edu

Professor David C. Parkes

Computer Science Area
Harvard University
Science and Engineering Complex, 150 Western Ave
Boston, MA 02134
(617) 384-8130
parkes@eecs.harvard.edu

Professor Tim Roughgarden

Department of Computer Science
Columbia University
500 West 120th Street, Room 450
MC0401
New York, NY 10027
(212) 853-8474
tim.roughgarden@gmail.com