Matheus Venturyne Xavier Ferreira

PERSONAL DATA   MAY 24, 2023

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RESEARCH INTERESTS

Artificial Intelligence, Optimization, Algorithmic Economics, 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

- Research Member, Simons Laufer Mathematical Sciences Institute   2023
- 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
- CRA-WP Grad Cohort for URMD, Computing Research Association   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
- Brazil Scientific Mobility Program, Federal Government of Brazil   2014
- 1st place in 2nd Line Follower Robot Competition, Unifei [**Video**]   2013

PUBLICATIONS (Authors in alphabetical order)

- 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

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

SERVICE

Organizing Committee

Poster Co-Chair for the ACM EAAMO'23	2023

Program Committee

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

Journal Reviewer

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

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. Eighth Marketplace Innovation Workshop
   May 22, 2023
   Credible, Optimal Auctions via Blockchains

2. Research Day at the Metrograph
   New York City, NY, May 16, 2023
   Credible Decentralized Exchange Design via Verifiable Sequencing Rules

3. Crypto and Blockchain Economics Research Forum (CBER) Symposium
   April 20, 2023
   Credible Decentralized Exchange Design via Verifiable Sequencing Rules

4. MIT, Algorithms and Complexity Seminar
Cambridge, MA, April 19, 2023
Credible Decentralized Exchange Design via Verifiable Sequencing Rules

5. Princeton University, Decenter Seminar
Princeton, NJ, April 10-13, 2023
Transparency and Security via Algorithmic Economics

6. University of Virginia, Department of Computer Science
Charlottesville, VA, March 20-22, 2023
Transparency and Security via Algorithmic Economics

7. Tufts University, Department of Computer Science
Medford, MA, February 28 and March 1, 2023
Transparency and Security via Algorithmic Economics

8. The University of Sydney, School of Computer Science
Sydney, Australia, February 20, 2023
Transparency and Security via Algorithmic Economics

9. Carnegie Mellon University, Crypto Seminar   [Video]
Pittsburgh PA, February 16, 2023
Transparency and Security via Algorithmic Economics

10. 4th International Conference on Blockchain Economics Security and Protocols (Tokenomics)
Sorbonne Université, France, December 12-13, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules

11. Harvard University, EconCS Seminar
Boston, MA, November 4, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules

12. SIGecom Seminar Series Fall 2022
November 4, 2022
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake

13. UC Berkeley, Crypto Economics Security Conference
Berkeley, CA, October 31-November 1, 2022
Credible Decentralized Exchange Design via Verifiable Sequencing Rules

14. INFORMS Annual Meeting
Indianapolis, IN, October 16-19, 2022
Optimal Strategic Mining Against Cryptographic Self-Selection in Proof-of-Stake

15. Rochester Institute of Technology (**Future Faculty Career Exploration Program**)
Rochester, NY, September 21-24, 2022
Economics and Computation in Distributed Systems

16. 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

17. Ripple Labs, Crypto Monthly
June 21, 2022
Economics and Computation in Distributed Systems

18. Harvard University, Theory of Computation Seminar
Boston, February 11, 2022
Proof-of-Stake Mining Games with Perfect Randomness

19. The 17th Conference on Web and Internet Economics (**Spotlights Beyond WINE**)   [Video]
December 15, 2021
Proof-of-Stake Mining Games with Perfect Randomness

20. 3rd ACM Conference on Advances in Financial Technologies   [Video]
    September 26-28, 2021
    Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market

21. 16th Workshop on the Economics of Networks, Systems and Computation
    July 23, 2021
    Dynamic Posted-Price Mechanisms for the Blockchain Transaction-fee market

22. 22nd ACM Conference on Economics and Computation   [Video]
    July 22, 2021
    Proof-of-Stake Mining Games with Perfect Randomness

23. Princeton University, Research Day   [Video]
    Princeton, May 2021
    Proof-of-Stake Mining Games with Perfect Randomness

24. Princeton University, Theory of Computation Day
    Princeton, April 2021
    Proof-of-Stake Mining Games with Perfect Randomness

25. Microsoft Research, Algorithms Group
    Redmond, WA, March 10, 2021
    Economics and Computation in Distributed Systems

26. INFORMS Annual Meeting
    November 2020
    Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments

27. 21st ACM Conference on Economics and Computation   [Video]
    July 2020
    Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments

28. Princeton University, Research Day (**Winning Presentation**)   [Video]
    Princeton, NJ, May 5, 2020
    Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments

29. Princeton University, Theory of Computation Day
    Princeton, NJ, June 2019
    Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments

30. Princeton University, Mechanism Design Seminar
    Princeton, NJ, June 2017
    Selling a Single Item with Negative Externalities: To Regulate Production or Payments?

REFERENCES

Professor S. Matthew Weinberg
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Princeton University
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Princeton, NJ 08544
smweinberg@princeton.edu

Professor David C. Parkes
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