Matheus Venturyne Xavier Ferreira

Personal Data — January 5, 2022

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Research Interests

Algorithms, Game Theory, Cryptography, Security

Education

Princeton University, NJ, USA
Ph.D in Computer Science — Sept 2016 - Dec 2021
Committee: S. Matthew Weinberg (Chair), Arvind Narayanan, David Parkes, Mark Braverman, Ran Raz

University of California, San Diego, CA, USA
Exchange student with a fully funded BSMP Scholarship *(GPA: 3.92/4.00)* — Jan 2014 - Dec 2014

Universidade Federal de Itajubá, Itabira, MG, Brazil
B.S. with Honors in Computer Engineering *(GPA: 93.3/100)* — Jan 2011 - July 2016

Appointments

Harvard University, Cambridge, MA, USA
Postdoctoral Fellow in Computer Science — Sept 2021 - Present
Research Assistant — June 2020 - Oct 2020

Broadcom Corporation, San Diego, CA, USA
Software Development Engineer Intern in Bluetooth/NFC — June 2014 - Sept 2014

Select Honors and Awards

- SEAS Award for Excellence, Princeton University — Dec 2020
- LATinE Fellow, Purdue University — July 2020
- Dean's Grant, Princeton University — 2016 - 2021
- First Year Fellowship in Engineering, Princeton University — Sept. 2016 - June 2017
- Congratulations from Higher Counsel, Universidade Federal de Itajubá — June 2016
- Motion of Applause, Municipal Chamber of Itabira — 2016
- CNS Espresso Prize for Excellence in Networking, University of California, San Diego — 2014
- 1^{st} place in 2nd Line Follower Robot Competition, Universidade Federal de Itajubá [Video] — 2013

Publications

1. Meryem Essaidi, Matheus V.X. Ferreira, and S. Matthew Weinberg. Credible, strategyproof, optimal, and bounded expected-round single-item auctions for all distributions. In *Innovations in Theoretical Computer Science*, ITCS '22, 2022. Forthcoming

2. 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, New York, NY, USA, 2021. Association for Computing Machinery

3. 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

4. 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, pages 683—-712, New York, NY, USA, 2020. Association for Computing Machinery

5. 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, pages 196—206, New York, NY, USA, 2019. Association for Computing Machinery

SERVICE

Program Committee. International Conference on Mathematical Research for Blockchain Economy (2022), Journal of Cryptoeconomic Systems (2020, 2021), Global Challenges in Economics and Computation (2020).

Referee. STOC (2022), SODA (2022), ACM EC (2021), USENIX Security Symposium (2021), Games and Economic Behavior (2020), AFT (2020), ITCS (2019, 2020), WINE (2018, 2019, 2020).

TALKS

Dynamic Posted-Price Mechanisms for the Blockchain Transaction fee market

- 3rd ACM conference on Advances in Financial Technologies [Slides] Sept 2021
- 16th Workshop on the Economics of Networks, Systems and Computation July 2021

Proof-of-Stake Mining Games with Perfect Randomness

- **Spotlights Beyond WINE**, The 17th Conference on Web and Internet Economics Dec 2021
- 22nd ACM Conference on Economics and Computation [Video] [Slides] July 2021
- Princeton Research Day [Video] May 2021
- Theory day, Princeton University April 2021
- Poster, Tapia Conference Sept 2020
- Poster, CRA-WP, Austin, Texas Mar 2020

Economics and computation in decentralized systems

- Microsoft Research, Redmond [Slides] Mar 2021

Algorithms, game theory and blockchains

- Reading group at ORFE, Princeton University [Slides] Mar 2021

Credible, Truthful, and Two-Round (Optimal) Auctions via Cryptographic Commitments

- INFORMS Annual Meeting Nov 2020
- Poster, LATinE, Purdue University July 2020
- 21st ACM conference on Economics and Computation [Video] July 2020
- Princeton Research Day, Princeton University [Video] [Slides] May 2020
- Lightning Talk and Poster, WINE 2019, Columbia University Dec 2019
- Theory of Computer Science Group, Princeton University June 2019

Selling a Single Item with Negative Externalities: To Regulate Production or Payments?

- Poster, The Web Conference, San Francisco [Slides] May 2019
- Poster, 19th ACM EC 2018, Cornell University June 2018

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)

Undergraduate Students Mentoring

- Tinashe Handina. *Princeton University*, now Ph.D. student at Caltech — June 2020 – May 2021
  A Random walk in Extensive Form Games: An Investigation into information, strategy-proofness and Credibility.
- Catherine Yu. *Princeton University* — June 2020 – Present
  Incentives in the Algorand blockchain.
- Michelle Woo. *Princeton University* — Fall 2020 – Present
- Anthony Hein. *Princeton University* — Sept 2021 – Present

Diversity, Inclusion & Outreach

- Mentor, Algorithmic Game Theory Mentoring Workshop (AMW), SIGECOM — 2020 - 2021
- Peer Mentor, Graduate Scholars Program, Princeton University — 2019 - 2021
- Peer Educator, LGBTQIA Peer Ed Program, Princeton University — 2019 - 2020
- Mentor, Princeton Summer Programming Experience, Princeton University — 2017
- Mentor, Princeton Women in Computer Science, Princeton University — 2016 - 2017

Research Experience

- Research Assistant, Harvard University, MA, USA — June - Sept 2020
  Supervisor: Professor David C. Parkes
- Research Assistant, Princeton University, NJ, USA — June 2017 - Present
  Supervisor: Professor S. Matthew Weinberg
- Research Assistant, Universidade Federal de Minas Gerais, MG, Brazil — Sept 2013 - Feb 2014
  Supervisor: Professor Fernando Afonso Santos
- Research Assistant, Universidade Federal de Itajuba, MG, Brazil — July 2011 - Feb 2013
  Supervisor: Professor Carlos Henrique da Silveira

Software

Vein: Rivers of Blood [Video]: A distributed, real-time, 3D, multiplayer survival race game of microorganisms in the human body using C++ and DirectX11. My contributions focused on physics simulation, artificial intelligence and developing the game engine.

Caminhos Drummondianos [Google Play]: Android app for a tour in the Drummond's Path in the city of Itabira, the only literary path in South America. Drummond is considered one of the greatest Brazilian poet of all times.

Languages

Portuguese:	Mothertongue
English:	Fluent

Computer Skills

Programming:	Python, C/C++, Java, Matlab, OpenGL, SQL, JavaScript, OCaml, R, Perl
Others:	Linux, Windows, Bash, GDB, Git, LaTeX