Matheus Venturyne Xavier Ferreira

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Research Interests

I'm broadly interested in Algorithmic Design under Uncertainty and the interplay of Algorithmic Game Theory, Information Security, Fairness and Policy.

Education

In Progress	Doctor of Philosophy in Computer Science, **Princeton University** PhD Advisor: S. Matthew Weinberg School of Engineering and Applied Sciences Award for Excellence (2020). Dean's Grant (2016–2021). Fellowship in Engineering and Applied Sciences (2016).
Sept. 2018	M.A. in Computer Science at **Princeton University** Committee: Mark Braverman, Ed. Felten, Ran Raz, Matt Weinberg.
July 2016	B.S. in Computer Engineering at **Universidade Federal de Itajubá**, Brazil, GPA: 93.3/100 Academic Accolade for best student (2016). Congratulations from Higher Counsel (2016). 1^{st} place in Line Follower Robot Competition (2013).
Jan – Dec 2014	Visiting student, **University of California San Diego**, GPA: 3.92/4.00 Fully Funded Scholarship from Brazilian Federal Government. George Varghese Espresso Prize (2020).

Honors and Awards

- Tapia Scholarship, Tapia Conference — Sept 2020
- LATInE Fellow, Purdue University — July 2020
- 2020 CRA-WP Grad Cohort for URMD, CRA — March 2020
- AGT Mentoring Workshop Grant, ACM — June 2019
- Motion of Applause, Municipal Chamber of Itabira — May 2016
- Undergraduate Research Fellowship at UFMG , Fapeming — Sept 2013
- Undergraduate Research Fellowship at Unifei, Fapeming — Feb 2012

Publications (Authors are Ordered Alphabetically)

1. 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
2. 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

Working Papers (Authors are Ordered Alphabetically)

1. Matheus V. X. Ferreira and S Matthew Weinberg. Proof-of-stake mining games with perfect randomness. *Under review*, 2021
2. Matheus V. X. Ferreira, Daniel J. Moroz, David C. Parkes, and Mitchell Stern. Dynamic posted-price mechanisms as a blockchain transaction fee mechanism. *Under review*, 2021
3. Matheus V. X. Ferreira, Sally Hahn, S. Matthew Weinberg, and Catherine Yu. Stake griding attacks in algorand. *Working Paper*, 2021

Work Experience & Long Term Visits

- Research Assistant, Harvard University — June – Sept 2020
  Supervisor: Professor David Parkes

- Research Assistant, Princeton University — June 2017 – Present
  Supervisor: Professor S. Matthew Weinberg
- Research Assistant, Universidade Federal de Itajuba — Jul 2011 – Feb 2013
  Supervisor: Professor Carlos Henrique da Silveira
- Research Assistant, Universidade Federal de Minas Gerais — Sept 2013 – Feb 2014
  Supervisor: Professor Fernando Afonso Santos
- Broadcom Corporation at San Diego, California — Jun-Sept 2014
  Software Development Engineer Intern in Bluetooth/NFC Software Team
  Supervisor: David Hughes

Service

Program Committee

- Cryptoeconomic Systems (2020).
- Global Challenges in Economics and Computation (2020)

Reviewing

- USENIX Security (2021)
- Games and Economic Behavior (2019 – 2020)
- ACM Advances in Financial Technologies (AFT) 2020
- Innovations of Theoretical Computer Science (ITCS) 2019, 2020
- Conference on Web and Internet Economics (WINE) 2018, 2019, 2020

Talks

Proof-of-Stake Mining Games with Perfect Randomness

- Poster Session, Tapia Conference, Virtual Event — Sept 2020
- Poster Session, CRA-WP, Austin, Texas — March 2020

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

- INFORMS Virtual 2020 Annual Meeting — Nov 2020
- Poster Session, LATinE, Purdue University — July 2020
- ACM Conference on Economics and Computation, Video — July 2020
- Princeton University Research Day, Video — May 2020
- Lightning Talk and Poster Session, WINE, Columbia University — December 2019
- Theory of Computer Science Group, Princeton University — June 2019

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

- The Web Conference, San Francisco — May 2019
- Poster Session, 19th ACM EC 2018, Cornell University — June 2018
- Mechanism Design Seminar, Princeton University — June 2017

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* — Summer 2020 – Present
  Combinatorial credible auctions.
- Matteo Russo. *Princeton University* — Summer 2020
  Characterizing the design space of single-item cryptographic auctions.
- Catherine Yu. *Princeton University* — Summer 2020 – Present
  Incentives in the Algorand blockchain.

- Michelle Woo. *Princeton University* Fall 2020 – Present
  Computing optimal selfish mining strategies for Proof-of-Stake blockchains via MDPs.
- Sang Truong. *DePauw University* Fall 2020 – Present
  Automatic market makers.

Diversity, Inclusion & Outreach

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

Software

Jun 2014 | University of California, San Diego
Vein – Rivers of Blood
Class Project Supervised by Geoff Voelker

- Developed a distributed, real-time, 3D, multiplayer survival race game of microorganisms in the human body using C++ and DirectX11.

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