

# Matheus Venturyne Xavier Ferreira

## PERSONAL DATA

DECEMBER 23, 2020

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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, <b>Princeton University</b> PhD Advisor: S. Matthew Weinberg <a href="#">School of Engineering and Applied Sciences Award for Excellence</a> (2020). Dean's Grant (2016–2021). Fellowship in Engineering and Applied Sciences (2016).
SEPT. 2018	M.A. in COMPUTER SCIENCE at <b>Princeton University</b> Committee: Mark Braverman, Ed. Felten, Ran Raz, Matt Weinberg.
JULY 2016	B.S. in COMPUTER ENGINEERING at <b>Universidade Federal de Itajuba</b> , GPA: 93.3/100 Academic Accolade for best student (2016). Congratulations from Higher Counsel (2016). 1 <sup>st</sup> place in Line Follower Robot Competition (2013).
JAN – DEC 2014	VISITING STUDENT, <b>University of California San Diego</b> , GPA: 3.92/4.00 Fully Funded Scholarship from Brazilian Federal Government. <a href="#">George Varghese Espresso Prize</a> (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 in Alphabetical Order

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

1. Matheus V. X. Ferreira and S Matthew Weinberg. Proof-of-stake mining games with perfect randomness. 2020
2. Matheus V. X. Ferreira, Sally Hahn, S. Matthew Weinberg, and Catherine Yu. Stake gridding attacks in algorand. 2020
3. Matheus V. X. Ferreira, Daniel J. Moroz, David C. Parkes, and Mitchell Stern. Blockchain transaction fee mechanisms via dynamic posted pricing. 2020

## WORK EXPERIENCE & LONG TERM VISITS

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- Research Assistant, Harvard University  
Supervisor: Professor [David Parkes](#) June – Sept 2020
- Research Assistant, Princeton University  
Supervisor: Professor [S. Matthew Weinberg](#) June 2017 – Present
- Research Assistant, Universidade Federal de Itajuba  
Supervisor: Professor Carlos Henrique da Silveira Jul 2011 – Feb 2013
- Research Assistant, Universidade Federal de Minas Gerais  
Supervisor: Professor Fernando Afonso Santos Sept 2013 – Feb 2014
- Broadcom Corporation at San Diego, California  
*Software Development Engineer Intern in Bluetooth/NFC Software Team*  
Supervisor: David Hughes Jun-Sept 2014

## SERVICE

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### Program Committee

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

### Reviewing

- [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

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### 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

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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)

## UNDERGRADUATE STUDENTS MENTORING

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- 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  
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

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- 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

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| Jun 2014 | <p>UNIVERSITY OF CALIFORNIA, SAN DIEGO<br/> <b>Vein – Rivers of Blood</b><br/>         Class Project Supervised by Geoff Voelker</p> <ul style="list-style-type: none"> <li>• Developed a distributed, real-time, 3D, multiplayer survival race game of microorganisms in the human body using C++ and DirectX11.</li> </ul> |
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## LANGUAGES

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PORTUGUESE: Mothertongue  
 ENGLISH: Fluent

## COMPUTER SKILLS

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

## REFERENCES

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**Professor Matthew Weinberg**  
 Assistant Professor  
 Computer Science Department  
 Princeton University  
 smweinberg@princeton.edu

**Professor Nick Feamster**  
 Neubauer Professor  
 Computer Science Department  
 Chicago University  
 feamster@chicago.edu

**Professor David Parkes**  
 George F. Colony Professor  
 Computer Science Department  
 Harvard University  
 parkes@eecs.harvard.edu

**Professor Carlos Henrique da Silveira**  
 Professor of Computer Engineering  
 Universidade Federal de Itajuba  
 carlos.silveira@gmail.com