

Matheus V. X. Ferreira

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PERSONAL DATA

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RESEARCH INTERESTS

I'm broadly interested in Algorithmic Design under Uncertainty and the interplay of Algorithmic Game Theory, Cryptography and Machine Learning.

EDUCATION

In Progress	Doctor of Philosophy in COMPUTER SCIENCE, Princeton University Research Advisor: Matthew Weinberg
SEPT 2018	M.A. in COMPUTER SCIENCE, Princeton University GPA: 3.95/4.00
JULY 2016	B.S. in COMPUTER ENGINEERING at Universidade Federal de Itajuba GPA: 92.8/100
JAN-DEC 2014	Non-degree international student, University of California, San Diego GPA: 3.92/4.00

WORK EXPERIENCE

<i>Jun-Sept 2014</i>	Broadcom Corporation at San Diego, California <i>Software Development Engineer Intern in Bluetooth/NFC Software Team</i> Supported the BTE Bluetooth stack, profiles and protocols – software development, debugging and testing. Developed enhancements in Broadcom WICED and Bluetooth tracing and testing tools
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WORKING PAPERS

- **Selling a Single Item with Negative Externalities: To Regulate Production or Payments?**
Matheus Venturyne, S. Matthew Weinberg, Danny Yuxing Huang, Nick Feamster, Tithi Chattopadhyay.
- **Constructions of Credible Mechanism with Cryptographic Assumptions.**
Matheus Venturyne, S. Matthew Weinberg.

INVITED TALKS

June 2018	Poster Session, 19th ACM EC 2018, Ithaca, NY Mitigating Insecure Devices, to Regulate Consumers or Manufacturers?
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RESEARCH EXPERIENCE

Fall 2018	<p>PRINCETON UNIVERSITY</p> <p>Commitment schemes in the Constructions of Credible Mechanism.</p> <ul style="list-style-type: none">• We show commitment schemes are sufficient to construct truthful, credible auctions with constant communication when buyers have MHR distribution. However, when distributions are regular even with commitments, no mechanism is truthful, credible and have constant rounds of communication.
Spring 2017	<p>Selling a Single Item with Negative Externalities: To Regulate Production or Payments?</p> <ul style="list-style-type: none">• We model a regulation of production and/or payments when selling an item cause externalities to society (e.g. security vulnerabilities from computer devices, pollution from oil exploration licenses). We show simple regulations (regulates only production or only payments) are not optimal but are approximately optimal.
Fall 2016	<p>Make Crypto Safe Again! Detecting Bugs in API Usage Using Bounded Model Checking</p> <p>Course project supervised by Aarti Gupta.</p> <ul style="list-style-type: none">• Libraries for secure communication such as OpenSSL expect software developers to follow well defined procedures in the API calls. We developed a system to detect incorrect use of OpenSSL and flag software vulnerabilities.
Fall 2016	<p>Dolphin: Dataplane Load-balancing in Programmable Hybrid Networks</p> <p>Course project supervised by Jenifer Rexford.</p> <ul style="list-style-type: none">• New generation network switches allow network developers to design new network management applications with high efficiency. We design a load-balancing application for a hybrid network composed by new generation and legacy switches that reaps the benefits of programmable switches without losing interoperability with legacy switches.
Jun 2016	<p>UNIVERSIDADE FEDERAL DE ITAJUBA</p> <p>SDN-based Mobile Cloud Computing over heterogeneous networks</p> <p>Supervised by Juliano de Almeida Monte-Mor.</p> <ul style="list-style-type: none">• Developed a middleware architecture for computational offloading in infrastructure-less networks.
Feb 2013	<p>Characterization of transitions in secondary structure elements of All-beta Proteins</p> <p>Supervised by Carlos Henrique da Silveira</p> <ul style="list-style-type: none">• Defining the secondary structure (α-helices and β-sheets) of proteins are important in predicting their functionality. In this project, we characterize α-helices discontinuities in all-beta protein domains by extracting statistical signals from a data-set of discontinuities.

SOFTWARE

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

COURSE WORK

Open Problems in Algorithmic Game Theory, Theoretical Machine Learning, Advanced Cryptography, The Probabilistic Method, Advanced Algorithm Design, Probability in High Dimension, Advanced Computer Networks, Automated Reasoning about Software

TEACHING

Princeton University

Spring 2018	Economics and Computation (COS 445)
Fall 2017	Computation Geometry (COS 451)

Universidade Federal de Itajuba

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

HONORS AND AWARDS

SEPT. 2016	Dean's Grant, Princeton University
SEPT. 2016	First Year Fellowship, Princeton University
JULY 2016	Academic Accolade for best student, Universidade Federal de Itajuba
DEC. 2014	George Varghese Espresso Prize, University of California, San Diego
JAN-DEC 2014	Brazil Scientific Mobility Program, fully-funded scholarship recipient University of California, San Diego
SEPT 2013	Fapemig Research Scholarship, LOTMine, Universidade Federal de Minas Gerais, Brazil
SEPT 2013	1 st Line Follower Robot Competition, Universidade Federal de Itajuba, Brazil
FEB 2012	Fapemig Research Scholarship, Universidade Federal de Itajuba, Brazil

LANGUAGES

PORTUGUESE:	Mothertongue
ENGLISH:	Fluent

COMPUTER SKILLS

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