Pedro L. Ferreira

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BIO

I am Pedro Ferreira, a recent MSc graduate in Applied Mathematics from Instituto Superior Técnico, University of Lisbon, in Portugal. I grew up in a small town near the tallest mountain range in Continental Portugal, Serra da Estrela. I spent most of my childhood working on my parent's farm, and did not really enjoy my time at school. During my time in high school, I learned about how physics, daunting as it may be, allowed me to understand the underlying mechanisms of phenomena in everyday life. This guided me to leave the countryside and go study physics at the portuguese capital, Lisbon.

In my free time, I like to read about scientific progress and never say no to discussions about the future. I also build videogames, create websites for fun, and go mountain hiking in Serra da Estrela.

RESEARCH INTERESTS:

- Artificial Intelligence
- Learning Theory
- Multi-agent Systems
- Theoretical Physics
- Complex Networks
- Neuroscience
- Game Theory
- Computational Models
- Deep Learning

PROGRAMMING LANGUAGES AND SOFTWARE:

- Python
- C / C++
- C#
- Mathematica
- HTML5 / CSS3
- JavaScript
- PHP
- LaTeX
- SQL
- PyTorch
- GIT
- Unity Game Engine

PUBLICATIONS

Coordination among Autonomous Agents with Cognitive Biases and Theory of Mind 2019
Pedro L. Ferreira, Sérgio Pequito, Francisco C. Santos, Conference paper under review.

SEMINARS

Homo Ex Machina: The Man from the Machine May 2019
Department of Physics and Mathematics, Instituto Superior Técnico, University of Lisbon.

WORK EXPERIENCE

RESEARCHER 2019
INESC-ID, Lisbon, PT.
Grant from *Instituto de Engenharia de Sistemas e Computadores - Investigação e Desenvolvimento* (INESC-ID). Studied the cooperation between countries in climate change agreements using evolutionary game theory based on behavioral decision models from psychology and economic theories of value. Research was supervised by Prof. Francisco C. Santos.

RESEARCH SCHOLAR 2019
Rensselaer Polytechnic Institute, NY, USA.
Invited by Prof. Sérgio Pequito to write the master thesis abroad as a visiting researcher at the Department of Industrial and Systems Engineering of Rensselaer Polytechnic Institute, with stipend.

PRIVATE TUTOR 2017-2018
Lisbon, PT.
Tutored several high school- and university-level students, individually, in Electromagnetism, Calculus and Linear Algebra.

INTERN AT COSMIC RAY LABORATORY, LIP 2016

Instituto Superior Técnico, Lisbon, PT.

Worked towards a C++ computational tool to aid signal forecasting and particle detection using scintillation and Cerenkov radiation in the SNO+ neutrino experiment, designed to look for neutrinoless double beta decay. Internship offered by LIP under Prof. Fernando Barão.

EDUCATION

MSC, APPLIED MATHEMATICS 2017-2019

Instituto Superior Técnico, Lisbon, PT.

Majored in Probability and Statistics. MSc thesis focused on understanding emergence of human coordination using behavioral decision models and theory of mind. Thesis supervised by Prof. Francisco C. Santos, in collaboration with Prof. Sérgio Pequito, from Rensselaer Polytechnic Institute, NY. **Defended thesis was awarded with a grade of 19/20**, finishing my degree with a grade of 17/20.

Course Grades:

Complex Networks	20/20
Dissertation	19/20
Research Project	19/20
Deep Structured Machine Learning	19/20
Learning and Intelligent Decision-Making	18/20
Machine Learning	17/20
Mathematical Statistics	17/20
Statistical Methods in Data Mining	16/20
Introduction to Stochastic Processes	15/20
Time Series Analysis	15/20
Probability Theory	14/20
Computability and Complexity	14/20
Reliability and Quality Control	12/20

BSC, ENGINEERING PHYSICS 2014-2017

Instituto Superior Técnico, Lisbon, PT.

Provided me with unique first principles reasoning, and analysis and modeling tools which have served me greatly in other fields. I finished my BSc degree with a grade of 15/20.

Course Grades:

Linear Algebra	19/20
Programming	19/20
Innovation and Development Laboratory	19/20
Techniques of Mathematical Physics	17/20
General Mechanics	17/20
Computational Physics	17/20
Oscillations and Waves Laboratory	17/20
Advanced Experimental Physics Laboratory	17/20
Quantum Mechanics I	16/20
Complex Analysis and Differential Equations	16/20
Analytical Mechanics	16/20
Mechanics and Waves	16/20
Computational Mathematics	16/20
Electromagnetism and Optics	16/20
Electromagnetism and Thermodynamics Laboratory	16/20
Atomic Physics, Optics and Radiation Physics Laboratory	16/20
Management	16/20
Quantum Mechanics II	15/20
Solid State Physics	15/20
Basic Experimental Physics	15/20

Digital Systems	15/20
Probabilistic and Statistics	14/20
Technological Laboratory	14/20
Circuits Theory and Electronic Fundamentals	14/20
Thermodynamics and the Structure of Matter	13/20
Classical Electrodynamics	13/20
Physics of Continuous Media	11/20
Statistical Physics	10/20