Pedro Ferreira

BA in Engineering Physics

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Current Status

Completing a Master's Degree on Applied Mathematics (Statistics Branch) at Instituto Superior Técnico of the University of Lisbon in Portugal. Writing my thesis on dynamic theory of mind in multi-agent systems.

Previous Projects

- **2018** - Stochastic Processes Project

  Studied quantum walks and simulated biased and unbiased discrete time quantum walk on a line and verified the quadratic quantum computation speedup compared to classical random walks.

- **2018** - Time Series Project

  Fitted linear and non-linear time series models on sea level time series and NASDAQ financial time series datasets.

- **2017** - Data Mining Project

  Exploratory analysis, supervised and unsupervised learning methods were used to study a very large videogame dataset.

- **2017** - Complex Networks Project

  Created a layer-based wildfire simulator using a heavily modified version of the heat equation on a grid, with height, tree density and wind effects.

- **2017** - Innovation and Development Laboratory Project

  Created a C++ Android application running in real-time that makes use of artificial neural networks and computer vision to detect Sudoku grids and identify digits which were passed on to a Sudoku solver.

- **2016** - Internship at the Cosmic Ray Laboratory of Instituto Superior Técnico:

  Created a computational tool for signal forecast and particle detection using scintillation and Cerenkov radiation in the SNO+ experiment, designed to look for neutrinoless double beta decay.

Academic Qualifications

- **2017-Present** - MSc in Applied Mathematics (Statistics) from Instituto Superior Técnico with 15.85 current average (grade scale is 0-20):
  - (Current) Research Project in Applied Mathematics
  - (Current) Deep Structured Machine Learning
  - (Current) Mathematical Statistics
  - (Current) Probability Theory
  - (16) Statistical Methods in Data Mining
  - (15) Introduction to Stochastic Processes
  - (12) Reliability and Quality Control
  - (15) Time Series Analysis
  - (20) Complex Networks
  - (14) Computability and Complexity
  - (17) Machine Learning
  - (18) Learning and Intelligent Decision-Making
- **2014-2017** - BA in Engineering Physics from Instituto Superior Técnico with 15.45 average (grade scale is 0-20):
  - (15) Basic Experimental Physics
  - (16) Mechanics and Waves
  - (19) Programming
  - (15) Digital Systems
  - (17) General Mechanics
  - (19) Linear Algebra
  - (14) Probability and Statistics
  - (14) Technological Laboratory
  - (16) Computational Mathematics
  - (17) Computational Physics
  - (17) Oscillations and Waves Laboratory
  - (13) Thermodynamics and the Structure of Matter
  - (16) Analytical Mechanics
  - (14) Circuits Theory and Electronic Fundamentals
  - (16) Complex Analysis and Differential Equations
  - (16) Electromagnetism and Optics
  - (16) Electromagnetism and Thermodynamics Laboratory
  - (16) Atomic Physics, Optics and Radiation Physics Laboratory
  - (13) Classical Electrodynamics
  - (16) Quantum Mechanics I
  - (17) Techniques of Mathematical Physics
  - (17) Advanced Experimental Physics Laboratory
  - (19) Innovation and Development Laboratory
  - (16) Management
  - (15) Solid State Physics
  - (10) Statistical Physics

Other Skills and Interests

- English and Portuguese language talking and writting skills.
- Microsoft Office for presentations and spreadsheet programming.
- Playing videogames and programming them in Unity game engine (C#).
- Vector graphics art design in Inkscape.
- Visiting Middle-Earth.
- Real-world data acquisition and processing.
- Fair Mathematica programming language experience.
- Extensive experience with LaTeX report and CV writting.