**Miguel Pereira Torres Costa**
25 July 1995
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## EDUCATION

2013 - 2016   **BA in Mathematics at Oxford University  -   First Class Award**

| **1st year:** | **2nd year:** | **3rd year:** |
|---|---|---|
| Groups and Group Actions | Linear Algebra | Topology and Groups |
| Linear Algebra | Differential Equations 1 and 2 | Algebraic Curves |
| Analysis | Metric Spaces and Complex | Algebraic Number Theory |
| Probability | Analysis | Banach Spaces |
| Design and Analysis of | Rings and Modules | Hilbert Spaces |
| Algorithms | Integration | Information Theory |
| Functional Programming | Probability | Martingales Through Measure |
| (Haskell) | Topology | Theory |
| Imperative Programming | Number Theory | Continuous Martingales & |
| (Scala) | Graph Theory | Stochastic Calculus |
| | Projective Geometry | |

2005 - 2013   **High School - Grande Colégio Universal**

## WORK EXPERIENCE

June & **Computing the Average Rank of Elliptic Curves** (Summer Project at Oxford University)
July   Elliptic Curves are an essential tool in Cryptography and Number Theory. During this project I used
2016   SageMath to populate a database with Elliptic Curves and their properties in order to analyse the
asymptotic behavior of properties such as the height of the elliptic curves increases.

Jul – Sep **Farfetch**
2015   Summer Internship where I applied self-taught Machine Learning techniques to solve a commercial
problem. The project I initiated was continued by other employees. I used Python, Microsoft Labs,
Microsoft SQL and R. This resulted in a published paper with Nuno Carneiro ( avaiable for perusal on
request ).

## ACADEMIC EXPERIENCE

5th Nov **G-Research Algorithmic Trading Competition** (Stock Exchange Simulator)
2014   Each team was tasked with the writing of a micro transaction manager algorithm. The relative
performance of each team was determined through a live trial with stock values based on a
random historical sample.
1st Place

July & August **London International Youth Science Forum**
2014   Participant - Entry funded as a prize by the Calouste Gulbenkian Foundation.

2010 - 2013 **Delfos Project** (Mathematical Weekend School for pre-University students)
Met many friends with whom I still share mathematical insights and interesting problems.

10th Mar 2012 **Hands on Particles**
Masterclasses on Particle Physics organized by the *European Particle Physics Outreach Group*
Participant

## SKILLS

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|---|---|
| **IT** | Theoretical basis in Imperative Programming (Scala), Functional Programming (Haskell) and Design and Analysis of Algorithms.<br>Medium proficiency in Python.<br>Basic proficiency in C++ and Haskell. |
| **Software** | Microsoft Office, Open Office, Anaconda & Jupiter Notebooks, Mathematica, SketchUp, R. |
| **Driving License** | Category B |

## OLYMPIADS

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|---|---|
| May 2009 | **Portuguese National Chemistry Olympiad** (Silver Medal) |
| November 2010 | **Paulista Math Olympiad** (Bronze Medal) |
| March 2012 | **Portuguese National Math Olympiad** (Gold Medal) |
| July 2012 | **Portuguese Speaking Countries Math Olympiad** (Silver Medal) |
| November 2012 | **Paulista Math Olympiad** (Silver Medal) |
| March 2013 | **Portuguese National Math Olympiad** (Bronze Medal) |
| August 2013 | **Portuguese Speaking Countries Math Olympiad** (Gold Medal) |
| September 2013 | **Ibero-American Math Olympiad** (Bronze Medal) |

## LANGUAGES

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|---|---|
| Native/Bilingual Proficiency | **Portuguese**<br>**English** |
| Basic Proficiency | **Spanish**<br>**French** |

## INTERESTS & ACTIVITIES

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|---|---|
| **Puzzles** | I enjoy spending hours on riddles. This includes working with Lego, coding problems, developing the optimal strategy for board games, real time strategy PC games, wondering about philosophical paradoxes, amongst others. |
| **Sports** | Oxford University Handball team 2014-present<br>Oxford University Quidditch team 2013-2014<br>College level Football, Basketball and Pool |

## REFEREES

| | |
|---|---|
| **João Sousa** | Physics PhD, University of Aveiro (2014)<br>Data Scientist at Farfetch, Portugal, joao.gomes@farfetch.com |
| **Richard Earl** | Director of Undergraduate Studies, Mathematical Institute, University of Oxford, richard.earl@maths.ox.ac.uk<br>Tutor in Mathematics and Tutor for Admissions, Worcester College, University of Oxford. |