

# TOMAS PEREIRA DE VASCONCELOS

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## Five things you should know about me...

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- I am passionate about all things physics, maths, and tech!
- I am currently a Mathematics graduate student at King's College London.
- In 2017 I graduated from Royal Holloway, UoL with a First Class Honours degree in Physics.
- My computing skills range from scientific computing, to data analysis, and web development.
- I have academic research experience in theoretical statistical mechanics and molecular dynamics.

## Computational Skills

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### Python

- I have extensive experience in data analysis, web scraping, and solving complex numerical problems.
- I've become fluent in Python's more advanced OOP features and it's community standards.
- Python is the most used and useful computation tool for my daily work.
- **Data analysis** (NumPy, SciPy, Pandas) - **Machine learning** (Google's Scikit-Learn)
- **Web scraping** (BeautifulSoup, mechanize, requests) - **Web & API** (Django, Django REST Framework)

### Web

- I've acquired professional experience in database, API, and server-side & backend development.
- I have also worked with frontend web development & web design by building websites, blogs, dashboards and web application with HTML, CSS, and JavaScript, and various web technologies.
- **Server-side** (Docker, nginx, Gunicorn, Django) - **REST API** (Django, Django REST Framework)
- **Docker services** (DockerCloud, DockerHub) - **Database** (MySQL, sqlite, Hadoop)

### mdsea / Personal Project (*GitHub: [git.io/vp9Tp](https://github.com/vp9Tp)*)

- mdsea is a stand-alone Python molecular dynamics library equipped with a flexible simulation engine and multiple analysis tools, including integrated beautiful visualization in 1, 2, and 3 dimensions.

### Save-A-Space / Professional Project

- I built the engine and API that deals with the analysis of parking data and occupancy prediction.
- Using modern machine learning and web tools, I delivered reliable predictions up to a 99% confidence.

# Education

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## Mathematics GradDip

*King's College London, UK | Sep 2017 - Aug 2018*

- Developed a robust mathematical foundation for further studies and research in theoretical physics.
- Refined my mathematical intuition to interpret and build models for simple and complex systems.
- The skills acquired are highly transferable to other fields of applied mathematics and statistics.

## Physics BSc / First Class Honours

*Royal Holloway, UK | Sep 2013 - Jun 2017*

- Developed multiple computing projects with a focus on data analysis and molecular dynamics.
- Exposed to advanced experimental methods in collection of experimental data, evaluating its significance, drawing relevant conclusions, and calculating the significant statistics.
- Experience in communicating scientific information and producing clear and accurate reports.

## Intercultural Exchange Year / 93%

*River Ridge High School, USA | Aug 2011 - May 2012*

- Took part in a 1-year exchange program (AFS) for my last year of secondary studies.
- Achieved top grades for mathematics, physics, and chemistry with scores ranging from 95% to 100%.

## Science & Technology Diploma / 80%

*Escola Salesiana de Manique, Portugal | Sep 2008 - Jun 2011*

- Scored 85% on the Physics & Chemistry national exam, placing me in the country's top 3%.

# Research

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## BSc Physics Thesis / 82% *(Comments from the supervisor and markers:)*

- "His overall performance was in the excellent category."
- "Tomas observed and brought out [...] a number of very interesting results, of a caliber which would reflect well on a researcher of many more years experience."
- "The series expansion and MD modeling aspects of the project were definite steps forward in our understanding of the behavior of this system."
- "[Tomas] derived single-handedly a series expansion in terms of orthogonal polynomials, which is a new approach as far as I am aware."

## Publications

- "The second virial coefficient of bounded Mie potentials" - The Journal of Chemical Physics 147, 214504 (2017) <https://doi.org/10.1063/1.5006035>