César A. **Parra Rojas**

Data Scientist · Theoretical physicist

Frankfurt am Main, Germany

cesar.parra.r@gmail.com | cparrarojas.github.io | cparrarojas | cparrarojas

Personal statement

I am a data scientist currently working with CRM data to extract actionable insights in order to increase customer retention and aid business growth. I have a strong analytical and computational background, with extensive experience in interdisciplinary research. I am comfortable working in diverse, international teams, and skilled at communicating technical concepts to non-technical audiences.

Education

Udacity

Machine Learning Engineer Nanodegree — *2018*

view certificate

The University of Manchester — *Manchester, UK*

Doctor of Philosophy (Physics) — *2016*

Universidad de Chile — *Santiago, Chile*

M.Sc. Physics — *2013*

Universidad de Chile — *Santiago, Chile*

B.Sc. Astronomy — *2012*

Universidad de Chile — *Santiago, Chile*

B.Sc. Physics — *2010*

Work Experience

Pirate Studios Ltd — *London, UK*

Data Scientist, within Science to Data Science 2019 — *Aug 2019*

- In a team of three, cleaned and analysed CRM data to uncover booking trends and customer behavioural patterns.
- Implemented a churn prediction model that is able to classify near-future customer churn with both high precision and recall.
- Directed goals and managed expectations through close contact with stakeholders.

Frankfurt Institute for Advanced Studies — *Frankfurt am Main, Germany*

Post-doctoral fellow — *May 2017–Sep 2019*

- Used mathematical modelling, data analysis and computer simulations to evaluate the within-host impact of influenza vaccination, as well as the within-host and epidemic effects of common antiviral drugs.
- In collaboration with microbiologists, worked with metabolic data and implemented a machine learning model to classify closely-related bacterial genera from soil samples.
- Effectively communicated mathematical insights to audiences from a biological background.

The University of Manchester — *Manchester, UK*

Doctoral student — *Sep 2013–Dec 2016*

- Worked on the development of a theoretical framework which aimed at understanding the complex macroscopic behaviour of collections of interacting elements described by simple microscopic rules, for the case when this behaviour is observed at discrete time intervals.
- Using tools from nonlinear dynamics and stochastic processes, derived an accurate approximation to the description of disease spread on finite populations of individuals with highly-heterogeneous contact networks while drastically reducing its mathematical complexity.

Universidad de Chile — *Santiago, Chile*

Masters student — *Mar 2011–Mar 2013*

- Using theoretical tools from statistical physics, as well as computer simulations, studied the macroscopic effects of small-scale swimming interactions in bacterial suspensions.

Cerro Calán Observatory *Santiago, Chile*

Intern *Jan 2011*

- Contributed to Python code aiming at generating an efficient observation plan for a robotic telescope by means of Ant Colony Optimisation and genetic algorithms.

Technical Skills

Programming	Extensive experience with Python, Mathematica. Familiar with MATLAB, FORTRAN, C++, Bash.
Data analysis and visualisation	Advanced NumPy, pandas, Matplotlib, Seaborn. Familiar with Plotly, Altair.
Databases	Experience with SQL, REST-like APIs.
Machine Learning	Advanced scikit-learn, XGBoost, LightGBM. Experience with SHAP, PyTorch, spaCy, CatBoost, Keras.
Other	Advanced LaTeX. Experience with Git/GitHub.

Languages

Spanish	Native
English	Fluent
German	Lower intermediate
Polish	Lower intermediate
Portuguese	Lower intermediate

Projects

PDEparams

Python module for parameter estimation in partial differential equations using the Differential Evolution algorithm.

github.com/cparrarojas/PDEparams

sdeparams

Python module for parameter estimation in stochastic differential equations with demographic noise.

github.com/cparrarojas/sde-parameter-estimation

EBOV-2018

Interactive Dash app showing parameter estimation and epidemic forecasting for the 2018 Ebola outbreak in the Democratic Republic of Congo.

cparrarojas.github.io/blog/2018/07/ebov-2018

find-wally

A deep learning solver for *Where's Wally?* puzzles, using transfer learning with the Keras implementation of RetinaNet.

github.com/cparrarojas/find-wally

Leadership

The University of Manchester Chilean Society *Manchester, UK*

Chair *2015–2016*

XI ChileGlobal Seminars UK: Education and Public Policy *Manchester, UK*

Co-organiser *May 2015*

The University of Manchester Chilean Society *Manchester, UK*

Board member *2014–2015*

Personal interests

Music Guitarist, vocalist, songwriter; releasing a progressive rock album as *slq* in 2020. Tenor of the University of Manchester Chorus (2013–2014) and of the School of Science and Engineering Choir of Universidad de Chile (2007–2009).

General Houseplants, birds, spiders, cycling, cooking. Latest favourite reads: *To the Lighthouse* (V. Woolf), *Invisible Women: Exposing Data Bias in a World Designed for Men* (C. Criado-Perez), *Infinite Jest* (D. Foster Wallace).