

Alfredo Hernández · Senior Data Engineer · 29th June, 1994

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EXPERIENCE

The Key Group

thekeygroup.com

Senior Data Engineer

April 2024 – Present

As a Senior Data Engineer within the Group Systems Engineering (GSE) team at The Key Group, I have focused on enhancing the company's data infrastructure and optimising data pipelines. My main responsibilities include:

- Assumed ownership of existing data pipelines, refactoring and cleaning up legacy Airflow code in consultation with stakeholders to improve reliability and maintainability.
- Took full ownership of the data warehouse, leading data lineage discovery, cleanup, and transition to a medallion architecture, optimising data flow and eliminating redundant and inefficient processes.
- Architected and developed internal Python libraries, creating reusable and standardised code across the organisation.
- Collaborated with the GSE team and SRE on infrastructure management, using Terraform to reduce single points of failure and ensure robust operations.
- Consolidated and standardised CI/CD processes in Cloud Build and GitHub Actions, improving consistency and efficiency, and added streamlined alerting through Slack webhooks.

Supersolid Ltd.

supersolid.com

Senior Data Engineer

October 2019 – December 2023

Pioneered initiatives as Supersolid's inaugural data engineer, significantly optimising costs and positioning Supersolid, a dynamic scaleup company, at the forefront of modern and innovative data practices while strategically preparing the company for Machine Learning readiness. My main responsibilities were:

- Built in-house data ingestion pipelines using Python, Airflow, and Cloud Functions eliminating the need for external integration services and enhancing data autonomy.
- Designed, implemented, and managed serverless APIs and tools using Python, R, Docker, and Cloud Run to automate and simplify several processes across multiple games.
- Developed, operationalised, and optimised data transformations pipelines using SQLX in Dataform on top of big BigQuery.
- Led a comprehensive overhaul of the cloud data engineering CI/CD process, and implemented version control for enhanced traceability and efficiency in resource monitoring.
- Developed and implemented best practices and documentation standards across multiple GCP services, ensuring consistency and scalability.
- Developed and maintained internal R packages to promote reproducible data analysis and data science frameworks, reduce development time of APIs and tools, and enhance knowledge management.
- Conducted ad-hoc analyses and deep-dives for several of Supersolid's games, including free-to-play and Roblox titles.
- Developed interactive dashboards and visualisations in Looker and R Shiny to provide actionable insights and facilitate data-driven decision-making across the company.
- Mentored junior data analysts in optimally using our internal R tools, Dataform, BigQuery, and Looker.
- Implemented Machine Learning models for predicting User Acquisition campaign profitability, resulting in improved decision-making and higher ROI for campaigns.
- Simplified FinOps data structure and reporting to optimise cloud usage and cost efficiency, driving financial accountability and visibility for each game.

Biodose Tools Team github.com/biodosetools-team
Project Maintainer *July 2019 – Present*
I maintain and ensure the continued development of the Biodose Tools R package as an Open Source project alongside RENEb colleagues. My responsibilities are:

- Collaborate with the team to develop and integrate new features, modules, and statistical methods into the package.
- Implement and improve unit tests for existing and new features, ensuring increased software stability by identifying potential bugs or issues before deployment to our production server.
- Ensure the package dependencies are up to date and that it complies with CRAN policies.

Universitat Autònoma de Barcelona uab.cat
Research Support Technician & Lead Statistical Programmer *July 2018 – July 2019*
In the frame of RENEb, I led the development Biodose Tools, an Open Source R Shiny application designed to assist professionals and researchers in Biological Dosimetry. The tool facilitates various computations and statistical analyses. The primary objectives were to clarify and document the statistical tests used, as well as to propose those considered most appropriate, and facilitate Interlaboratory Comparisons.

Notably, Biodose Tools has already achieved widespread adoption, being used in numerous universities and research centers across the world.

Centre de Recerca Matemàtica crm.cat
Research Intern in Complex Systems Group *September 2017 – July 2018*
My master's thesis (with Álvaro Corral and Isabel Serra as my thesis supervisors) consisted of developing statistical methods using bootstrap, permutation tests, and clustering to study the influence of sea surface temperature on tropical-cyclone intensity. Additionally, I created a unified hurricane occurrences dataset with finer temporal temperature tracking than those currently available.

Research Intern in Complex Systems Group *February – July 2017*
My bachelor's thesis (with Álvaro Corral as my thesis supervisor) consisted of the study of real hurricanes occurrences using some simple statistical models. The main skills I developed are:

- Geospatial data extraction and processing.
- Statistical programming and analysis.

Research Intern in Computational Neuroscience Group *February – July 2017*
Under the supervision of Alexander Roxin, I studied the macroscopic and microscopic description for networks of spiking neurons. The main skills I developed are:

- Mathematical modelling using ODEs.
- Optimisation of high-performance numerical simulations.

EDUCATION

Universitat Autònoma de Barcelona CERDANYOLA DEL VALLÈS, SPAIN
MSc in Modelling for Science and Engineering *2017 – 2018*
Thesis: *The Influence of Sea Surface Temperature on Tropical-Cyclone Intensity.*

Bachelor's degree in Physics *2012 – 2017*
Thesis: *On Tropical-Cyclones: An Statistical Analysis on a Warming Environment.*

Institut de Vic VIC, SPAIN
Baccalaureate diploma in Mixed Sciences *2010 – 2012*

COMPUTER SKILLS

Data Engineering: GCP (Google Cloud Platform), API design, Cloud Functions, Cloud Run, serverless computing, Docker, CI/CD, Cloud Composer, Apache Airflow, Dataflow, ETL (Extract, Transform, Load), data ingestion, data mining, data warehousing.

Data Analytics: SQL, BigQuery, Dataform (SQLX), Looker, LookML, statistical modelling, data wrangling, data visualisation, tidyverse, Pandas, NumPy.

Machine Learning: TensorFlow, Keras, XGBoost, tidymodels, Vertex AI, MLOps.

Programming: Python, R, Jupyter, Selenium, version control, Git, Bash, awk, C++, Mathematica, unit testing, numerical simulations.

Web Development: Shiny, Flask, Plumber, HTML, SCSS, CSS, Jekyll, Hugo.

Design: Inkscape, GIMP, Canva, Asesprite.

Additional: GNU/Linux, macOS, L^AT_EX, Computational Genomics, Agile, internal documentation.

PUBLICATIONS

- D. Endesfelder, U. Oestreicher, U. Kulka, E. A. Ainsbury, J. Moquet, S. Barnard, E. Gregoire, J. S. Martinez, F. Trompier, Y. Ristic, C. Woda, L. Waldner, C. Beinke, A. Vral, J. F. Barquinero, A. Hernández, S. Sommer, K. Lumniczky, R. Hargitai, . . . , A. Wojcik (2021). RENE/ EURADOS Field Exercise 2019: Robust Dose Estimation under outdoor Conditions based on the Dicentric Chromosome Assay. *International Journal of Radiation Biology*, 0(0), 1–48. <https://doi.org/10.1080/09553002.2021.1941380>
 - A. Hernández, D. Endesfelder, J. Einbeck, P. Puig, M. A. Benadjaoud, M. Higuera, E. Ainsbury, G. Gruel, U. Oestreicher, L. Barrios and J. F. Barquinero (2023). Biodose Tools: an R shiny application for biological dosimetry. *International Journal of Radiation Biology*, 1–13. <https://doi.org/10.1080/09553002.2023.2176564>
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CONFERENCE PRESENTATIONS

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| European Radiation Protection Week 2019
Oral Presentation
Title: <i>Biodose Tools: An R Shiny Application for Biological Dosimetry.</i> | STOCKHOLM, SWEDEN
15–17 th October 2019 |
| XXIXth International Biometric Conference
Poster Presentation
Poster: <i>The Environmental Influence on Tropical-Cyclones.</i> | BARCELONA, SPAIN
8–13 th July 2018 |
| VII Jornada complexitat.cat
Poster Presentation
Poster: <i>The Influence of Sea Surface Temperature on Tropical-Cyclone Intensity.</i> | BARCELONA, SPAIN
29 th May 2018 |
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CERTIFICATES

Stanford Online

STATSX0001: Statistical Learning

September 2021

Coursera

Production Machine Learning Systems

January 2020

End-to-End Machine Learning with TensorFlow on GCP

January 2020

ML with TensorFlow on Google Cloud Platform Specialization

January 2020

Structuring Machine Learning Projects

October 2018

Improving Deep Neural Networks

September 2018

Introduction to Probability and Data

September 2018

Neural Networks and Deep Learning

August 2018

OTHER INFORMATION

Languages: Spanish (*mother tongue*), Catalan (*mother tongue*), and English (*professional working proficiency*).

Interests: linguistics, art history, cinematography, literature, mathematics, music, open source, woodworking, cooking, typography, and UI/UX-design.