

JIMMY CALVO-MONGE

+506 89884004 • jimjocamon94@gmail.com • [linkedin.com/in/jimmy-calvo-monge-367636208](https://www.linkedin.com/in/jimmy-calvo-monge-367636208) • github.com/JimmyCalvoMonge

SUMMARY

Dedicated Data Scientist and Mathematician who enjoys challenges combining Mathematics, Statistics, Data Science and Software Development. With a strong educational background in these areas, I'm committed to helping companies develop successful resources based on predictive modeling and data analysis methods. I have experience in assessing different product-owner's data needs and providing production level systems to streamline and automatize data-based decision processes. I hope you will find my preparation and experience attesting to my ability and disposition for making the most intelligent and clean use of real world data.

EXPERIENCE

Intel Corporation, San José, Costa Rica: Statistician & Data Scientist

June 2021 –

- Enhanced inspection processes of defective units at manufacturing processes by fitting and measuring classification models.
- Enabled more in-depth detection of unusual production units by creating algorithms for multi-variable outlier and anomaly identification in numerical data.
- Improved manual data analysis processes by creating web-based tools to execute data download - inspection - reporting pipelines.

University of Costa Rica, San José, Costa Rica: Mathematics Professor

March 2019 – Dec 2022

- Designed material for courses in both pure and applied mathematics.
- Courses given: Calculus. Principles of Mathematics. Linear Algebra. Differential Equations for Engineers. Optimization Calculus. Number Theory. Honors Calculus. Abstract Algebra.
- Brought many programming applications to mathematics subjects as part of some advanced courses syllabus.

EDUCATION

Masters degree in Applied Mathematics

2021-2023

University of Costa Rica, San José, Costa Rica

In this program I have been able to study general areas of applied mathematics, including Applied Statistics, Probability, Optimization, Time Series, Data Analysis and Predictive Modeling. I'm working on a research project about novel techniques on adaptive human behavior for epidemiological models. My advisor: Dr. Fabio Sanchez, Cornell University.

Masters degree in Full Stack Web Development

2021-2022

Three Points Business School, Polytechnical University of Catalunya, Barcelona, Spain (Virtual)

A complete masters degree in full stack web development, covering fundamentals of front-end and back-end design, use of AWS resources for database and servers allocation, use of git, unit and integration testing and containers. As final project we addressed a real company problem involving the replacement of a complicated manual internal orders management system with a cleaner, user-friendly web-based product. The solution involved design of database architecture, API creation and frontend UI/UX design and implementation.

Masters degree in Pure Mathematics

2019-2020

University of Costa Rica, San José, Costa Rica

Continuing my studies in pure mathematics I decided to collaborate on a research project in Algebraic and Arithmetic Geometry under the supervision of prof. Dr. Marco Antei. We extended important research results in this advanced area of Mathematics, resulting in a peer-reviewed article published in a high ranking journal.

Bachelor in Mathematics.

2013-2018

University of Costa Rica, San José, Costa Rica

TECHNICAL SKILLS

Data Analysis and Statistics: Strong educational background on standard Supervised/Unsupervised Prediction Algorithms. Experience using anomaly detection and feature selection algorithms to flag and detect potential data issues in manufacturing testing data. Advanced knowledge in statistical tests, knowledge of basic design of experiments.

Design and Architecture Tools: HTML, CSS, JavaScript, SQL, Cloud Computing.

- **Data queries, database design and maintenance:** trained in SQL language, experience managing non-relational databases (MongoDB) as backend maintenance for data-driven web applications.
- Experience with **frontend** design and implementation. Part of my responsibilities consist of contributing to internal web-based tools for data analysis automation. This requires regular use of HTML and CSS as well as JavaScript programming. In my studies and free time I have ventured in using React.js as a frontend framework. Check a very simple personal [web-page](#) I created.
- **Cloud computing:** prepared in basic management of AWS services such as S3 and EC2. I studied these tools in my Web Development Masters. For my work at Intel, I use internal tools for database allocation resources, data refreshing scheduling and distributed computing. Eager to find more work spaces to use cloud computing more profoundly.

Programming: Python, R, JavaScript.

- Day to day experience with **Python**:
 1. Data wrangling, consumption and transformation with pandas, dask.
 2. Data visualization with plotly, matplotlib, plotnine.
 3. Web application design and frameworks: flask, dash, flask-caching.
 4. Statistical and machine learning models: scipy, sklearn, statsmodels. Outlier detection: pyod.
 5. Non-relational database management for ETL processes: pymongo.
- Experience with **R** for experimental data wrangling, inspection, model design, data exploration projects: hands on experience with many of R's standard packages for data manipulation (dplyr, tidyr, purr, stringr, lubridate, ggplot2) and classification model creation and evaluation (caret, statsr, h2o, ranger).

Others: Others: Constant use **git** for version control, code syntax best practices (flake8, pylint), experience with **matlab** to address numerical problems (numerical integration, matrix decomposition algorithms, solving systems of differential equations by step-wise algorithms).

ACADEMIC PROJECTS

Publications and Preprints

- Barquero-Sanchez, A. Calvo-Monge, J. *On the embedding of Galois Groups into wreath products*. arXiv preprint <https://arxiv.org/abs/2306.14386> (2023).
- Calvo-Monge, J., Sanchez, F., Calvo J.G., Mena, D. *A nonlinear relapse model with disaggregated contact rates: analysis of a forward-backward bifurcation*. Infectious Disease Modelling, Volume 8, Issue 3 (2023). <https://www.sciencedirect.com/science/article/pii/S2468042723000581>.
- Antei, M, Calvo-Monge, J. *Extension of torsors and prime to p fundamental group scheme*. Annales de l'Institut Fourier, Volume 72 (2022) no. 1, pp. 367-386. doi:10.5802/aif.3475. <https://aif.centre-mersenne.org/articles/10.5802/aif.3475>

Presentations and Talks

- **Gulf Coast Undergraduate Research Symposium, Rice University, Houston, TX**, November 2019. *Vector bundles and the fundamental group scheme over abelian schemes*.

- **Expeditions Club, Global Pervasive Computational Epidemiology, Biocomplexity Institute, University of Virginia**, December 2022. *Adaptive Human Behavior in Mathematical Models*.

Academic Record, University of Costa Rica, San José, Costa Rica

Second best academic score of University of Costa Rica, 2018. Best academic record of School of Mathematics of University of Costa Rica, 2019.

ABOUT ME

I'm always looking to take the extra step. I seek to work at organizations that value data, and teams that offer great opportunities for learning and improving each day. Nothing gives fulfillment more than these things:

- Be able to apply my knowledge to industry-specific problems.
- See the satisfaction in clients/stakeholders when I can streamline decision-making and/or prediction tasks through data analysis, automation and robust architecture processes.
- Learning new tools, more efficient ways of performing tasks, new algorithms and techniques.

For the future I would like to expand and enhance my professional experience in these fields I enjoy so much. Specifically, the next step I would like to take would be to enter into the world of Machine Learning Engineering/Data Engineering. I would like to contribute to the design and implementation of machine learning systems and processes from a ML-Ops perspective. I believe my background and experience so far give me a nice start to delve more deeply into such exciting roles.