

# Ricardo M. Leal Lopez

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## EXPERIENCE

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### Data Scientist / Software Engineer

June 2021 – Present

*Valiot*

*NL, México / Texas, USA*

- Led backend development of the ValueChainOS product team using Python and TypeScript, creating and optimizing APIs for data retrieval, reducing data complexity issues.
- Develop interfaces and tools to solve mathematical problems, including the solution of constraints-based problems. The tools were developed using heuristic, genetic and linear algorithms.
- Streamlined product implementation by generalizing internal packages, reducing development workload by at least 50%.
- Built and maintained CI/CD pipelines, deploying services on containers to ensure high availability and reliability across production environments.
- Built and maintained Python tools for distributed task queue systems, to handle all of our team's internal task operations.

### Research Assistant

February 2020 – June 2021

*Facultad de Ciencias Físico Matemáticas, UANL*

*NL, México*

- Develop simulations of various materials' to understand their behaviour and analyze their reactions using molecular dynamics techniques, programmed on Python and LAMMPS.
- Improve the results and execution time of the simulations using different optimization techniques such as gradient methods.
- Use Python to address the creation and manipulation of nanostructures, as well for data analysis and prediction of changes.
- Utilized HPC (High-Performance Computing) clusters to optimize the computational efficiency of simulations.

## EDUCATION

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### MSc. Computational Science and Applied Mathematics

México

*Universidad Internacional de la Rioja*

*Oct. 2023 – March 2025*

- Specialization in API development, CI/CD techniques, and software patterns for industrial solutions.

### BSc. Physics

México

*Universidad Autónoma de Nuevo León*

*Aug. 2017 – Dec 2021*

- Specialization in Computational Physics, focusing on materials science, molecular dynamics, and data analysis

## CERTIFICATES AND DIPLOMAS

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### Certified Scrum Developer (PSD I) | [Link](#) 🔗

2022

## PROJECTS

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### Dynamic GraphQL API | [Link](#) 🔗 | *Python, FastAPI, React, Docker*

- Developed a flexible Python API that is applicable to various GraphQL schemas.
- Implement methods to upload and process a customizable GraphQL schema.
- Include a Front End application to show the results.

### Optimizing Cashier-Client Assignment in Supermarkets | [Link](#) 🔗 | *Python, FastAPI, React, OR*

- Create an unique mathematical model for a supermarket with variable cashiers.
- Include constraints to develop the solution of the problem, including some as limited hours, lunch time to eat and overlaps.
- Implement a Front End page to create and analyze scenarios, setting data through data tables and selecting parameters to change the solution logic.

## TECHNICAL SKILLS

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**Languages:** Python, C++, JavaScript, Java, Rust, Golang

**Frameworks:** React, Node.js, Flask, FastAPI, Litestar, Selenium, Pytest

**Developer Tools:** Git, Docker, GCP, AWS, Azure, GraphQL

**Databases:** SQL, MongoDB, DynamoDB, PostgreSQL

**Knowledge:** HPC, Operations Research, API development, Big Data, Scrum Methodologies, CI/CD