

# ARTURO RENTERÍA

## Software Developer | Scientific Researcher

Hermosillo, Sonora, Mexico | (+52) 662 336 8639 | [arturylab@gmail.com](mailto:arturylab@gmail.com)

[LinkedIn](#)  [GitHub](#)  [URL portfolio](#) 

## ABSTRACT / OBJECTIVE

Software developer and scientific researcher with a strong background in Nanotechnology, currently pursuing a Ph.D. with focus on computational chemistry and high-performance computing (HPC), experienced in building scientific applications through full stack development integrated with cloud services and databases, and dedicated science and technology educator with several years of teaching experience at high school and university levels.

## SKILLS

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### TECHNICAL SKILLS:

- **Full Stack Development:** HTML, CSS, JavaScript, Typescript, React, Next.js, Django, Flask
- **Data Science & Machine Learning:** Python, NumPy, pandas, Matplotlib, SciPy, Scikit-learn, Ollama
- **High-Performance Computing:** Slurm, Linux, Bash
- **Database Management:** MySQL, PostgreSQL, SQLite
- **DevOps & Cloud:** Git, GitHub, Docker, Azure, Oracle Cloud
- **Design:** Figma
- **Work Tools:** Notion, Slack

### SOFT SKILLS:

Effective Communication | Teamwork | Troubleshooting | Time Management | Adaptability | Critical Thinking | Problem Solving | Conflict Resolution | Leadership | Active Listening | Creative Think | Decision-Making | Attention to Detail | Initiative & Proactivity

## PROFESSIONAL EXPERIENCE

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### Teacher:

**Universidad Estatal de Sonora (UES)** | August 2024 – December 2024

As a higher-level teacher at this university, I taught the subjects of Integral Calculus and Numerical Methods.

**Colegio de Bachilleres del Estado de Sonora (COBACH)** | August 2017 – January 2024

As a high school teacher at this institution, I taught the subjects of Computer Science, Mathematics, Differential and Integral Calculus, and Probability and Statistics.

**Instituto Tecnológico Superior de Cajeme (ITESCA)** | August 2019 – July 2020

As a higher-level teacher at this institution, I taught the subjects of Differential, Integral and Vector Calculus, Algorithms and Programming Languages, Properties of Materials and some subjects of Industrial Engineering.

### Systems Manager:

**Secretary of Social Development, PROSPERA** | July 2013 – January 2018

Management, maintenance and support of the program's information systems. I supervised the correct functioning of the technological infrastructure (hardware, software, networks and databases), providing technical support to users and resolving incidents. I managed technological resources and generated technical and analytical reports for decision making. My role was key in the protection of data and the fulfillment of the operational objectives of the program.

## ACADEMIC BACKGROUND

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**University of Sonora** | August 2022 – July 2026

PhD in Nanotechnology

Thesis: *Structural, Electronic and Magnetic Properties for FelComNin Clusters ( $l+m+n=38$ ) with DFT Studies*

**University of Sonora** | August 2020 – July 2022

Master's Degree in Nanotechnology

Thesis: *Analysis of the Potential Energy Surface and Search for Transition States in Clusters of Atoms of Bimetallic Nanoalloys Pd12Pt1*

## CERTIFICATES AND ADDITIONAL COURSES

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- **Coursera:**
  - **Microsoft Python Development Professional Certificate:** Python Programming Fundamentals | Data Analysis and Visualization with Python | Automation and Scripting with Python | Web Development with Python | Advanced Python Development Techniques | Python Project Development
  - **Meta Back-End Developer Professional Certificate:** Introduction to Back-End Development | Programming in Python | Version Control | Introduction to Databases for Back-End Development | Django Web Framework | APIs | The Full Stack | Back-End Developer Capstone | Coding Interview Preparation
  - **Meta Back-End Developer Professional Certificate:** Introduction to Front-Development | Programming with JavaScript | Version Control | HTML and CSS in depth | React Basics | Advance React | Principles of UX/UI Design | Front-End Developer Capstone | Coding Interview Preparation

## LANGUAGES

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Native Spanish | English TOEFL-ITP level B2

## PROJECTS

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### DumpMyCash

Minimalist personal financial management web application. Track expenses, manage accounts, and organize transactions with a clean, intuitive interface built with Flask and Bootstrap.

**Stack:** *Python, Flask, HTML, CSS, JavaScript, PostgreSQL & Oracle Cloud*

 <https://github.com/arturylab/dumpmycash>

 <https://dumpmycash.demo-portal.eu/login>

### ClusterWebLab

Advanced molecular cluster analysis platform for visualizing, generating, and optimizing molecular structures with 3D visualization and computational chemistry tools.

**Stack:** *Python, SciPy, NumPy, Flask, HTML, CSS, JavaScript & Oracle Cloud*

 <https://github.com/arturylab/clusterWebLab>

 <https://clusterweblab.appx.ro/>

### Reaction Pathway Study Using the NEB Method and the Gupta Potential

This project implements a reaction pathway calculation using the NEB (Nudged Elastic Band) method with a custom Gupta potential. Since this potential is not included by default in the ASE (Atomic Simulation Environment) library, it was developed as a replacement for the EMT potential. The code enables the study of transitions between reactant and product states in atomic systems, generating intermediate configurations and evaluating the potential energy along the reaction pathway.

**Stack:** *Python, SciPy, NumPy, Matplotlib, Atomic Simulation Environment (ASE)*

*This project is currently under consideration for publication in the **Journal of Materials Science and Chemical Engineering (MSCE)**.*

 <https://github.com/arturylab/reaction-pathway>