ARTURO RENTERÍA

Software Developer | Scientific Researcher

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LinkedIn 🔗 | GitHub 🔗 | URL portfolio 🌐

ABSTRACT / OBJECTIVE

Full-stack Python developer and scientific researcher specializing in Next.js and Django, with expertise in cloud-based applications, databases, and high-performance computing (HPC). Pursuing a Ph.D. in Nanotechnology focused on computational chemistry and large-scale simulations, I build scalable scientific platforms that integrate modern frontend experiences with robust backend architectures. As a STEM educator with years of teaching experience at high school and university levels, I am passionate about mentoring, simplifying complex concepts, and creating innovative solutions that bridge science and software development.

SKILLS

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
- **Computational Chemistry:** Orca, Gaussian, Slurm, Avogadro
- **Database Management:** MySQL, PostgreSQL, SQLite
- **DevOps & Cloud:** Git, GitHub, Docker, Azure, Oracle Cloud, Linux
- **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

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

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*

University of Sonora | August 2000 – May 2005
Industrial and Systems Engineering

CERTIFICATES AND ADDITIONAL COURSES

- **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 Desgin | Front-End Developer Capstone | Coding Interview Preparation

LANGUAGES

Native Spanish | English TOEFL-ITP level B2

PROJECTS

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

Password Generator
A secure and customizable password generator. Generate secure passwords from 4 to 64 characters. Optimized for deployment on Vercel 🔑
Stack: *Next.js, TypeScript, Tailwind CSS, shadcn/ui, Vercel*
- https://github.com/arturylab/password-generator
- https://password-generator-app.arturylab.dev/