MARCO ANTONIO GARCÍA GÁMEZ

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MAJOR PROJECTS / EXPERIENCE

Interactive Platform with Django for 'Imposex' Phenomena February **August 2024 - November 2024**

- Developed a **Django**-based web application to analyze the marine phenomenon "Imposex" (abnormal sexual organ development in mollusks linked to chemical pollution).
- Data extraction, cleaning, and preprocessing using pandas and **numpy** from marine biology sources.
- Advanced data exploration and interactive dashboards with **Plotly**, embedded directly into the Django front-end.
- Predictive modeling of severity indexes using **scikit-learn** (Random Forest, Gradient Boosting), informing environmental interventions.

Computer Vision and Image Processing with Python **February 2024 - June 2024**

- Developed a comprehensive data analysis pipeline for image-based feature extraction and object recognition. Implemented advanced object detection and pattern recognition using **Python**, **OpenCV**, and state-of-the-art feature extraction methods (e.g., **Haarcascade**, **SIFT**, **ORB**).
- Integrated classification models via **PyTorch** and **TensorFlow**, optimizing performance through activation functions (Sigmoid, ReLU, Leaky ReLU) and regularization techniques. Achieved high-accuracy classification results on benchmarks such as **MNIST** and **CIFAR-10**, and designed a **Tkinter**-based graphical interface for real-time result visualization.
- Additionally, leveraged **Microsoft Azure**, **Google Cloud Platform** (**GCP**), and **Amazon Web Services** (**AWS**) to enable scalable image transformations and high-availability environments.

Real-Time Detection and Cloud Analysis **February 2024 - June 2024**

- Implemented a real-time video analysis system using **AWS Lambd**a and **AWS S**3, processing massive data streams and applying complex color space transformations.
- Integrated with **Azure** Machine Learning and **GCP** analytics suites for on-the-fly model deployment and performance evaluation. Ensured flexible scaling, responsive updates to environmental changes, and agile adaptation to new data sources.

Automated Microorganism Identification **August 2018 - December 2018**

- Built supervised classification models in **Python** with **scikit-learn** (SVMs, Decision Trees) and integrated a database back-end via **SQLAlchemy**. Subsequently improved accuracy by incorporating **TensorFlow** and **Keras**, resulting in more precise microorganism identification from biological datasets.

Simulation Project: Bioreactors **January 2018 - June 2018**

- Originally developed in MATLAB, this project was fully ported and enhanced in **Python**, now featuring a **PyQt-based** graphical user interface. Employed nonlinear optimization techniques, numerical integration (Euler, Runge-Kutta), and parameter fitting with statistical libraries.
- Deployed differential equation solvers to simulate dynamic behavior in various bioreactors, including fermenters, airlift bioreactors, and those specifically designed for beer production.

TECHNICAL SKILLS

- Programming and Data Analysis: Python, R, pandas, numpy, scikit-learn, StatsModels, matplotlib, seaborn, Plotly, Power BI, Tableau
- Machine Learning & Deployment: TensorFlow, PyTorch, Keras, CI/CD, AWS, GCP, Azure, Vercel.
- Databases & ETL: SQL (MySQL, SQL Server), SQLAlchemy, NodeJS, basic pyspark
- Web Development: HTML5, CSS3, Bootstrap, JavaScript, Tailwind CSS, Bootstrap, Django, Flask
- Version Management (Git & GitHub)
- Agile / Scrum

EDUCATION AND CERTIFICATES

University of Colima, Technical High School No. 9 - Campus San Pedrito, Manzanillo.

Technical High School Degree in Chemical Analysis **2014-2017**

- Young Scientists Workshop, 2016: participation in workshop conducted by the Heisenberg Institute under the aegis of the Faculty of Sciences at the University of Colima.

Technological Institute of Colima, Colima, Mexico

Bachelor Degree in Biochemical Engineering **2017 - 2021**

- Statistical Programming in R: Intensive Course during the Chemical Engineering Week, 2018

University of Colima, Campus El Naranjo, Manzanillo - Faculty of Electromechanical Engineering

Bachelor's in Software Engineering **2022 - Present (Sixth semester)**

- Certificate by the Directorate General of Higher Education for active participation in the "Bootcamp Innova Emprende Facultad de Ingeniería Electromecánica" workshop, orchestrated by the Directorate General of Innovation. Certificate Details: Book: PLDE- 008, Page: 007, STPS Registration: R6UCO.6209190013.

- Scrum Foundation Professional Certificate (SFPC) by CertiProf. Demonstrated knowledge and understanding of Scrum principles and practices. Applied Scrum framework to enhance project management and team collaboration, ensuring effective delivery of high-quality software products. Certified by CertiProf. Cetification ID: 91977034

LANGUAGES

- English B2
- Spanish - Native