Maximiliano **Osorio**

SOFTWARE ENGINEER

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Work Experience

Software Developer Consultant
THE UNIVERSITY OF TEXAS AT AUSTIN

Austin, TX
Mar 2021 - Present

- Planet Texas 2050 is an eight-year initiative aimed at finding solutions to make our communities more resilient and better prepared. To achieve this, we bring together architects, archaeologists, city planners, public health experts, geologists, engineers, computer scientists, artists, and other specialists.
- Refactored metadata APIs to improve their performance and maintainability using LoopBack 4, TypeScript, OpenAPI, and PostgreSQL.
- Designed and built a web application that allows users to run simulations on High Performance Computing (HPC) clusters without using SSH. The application is developed using FastAPI and React.

Software Developer Consultant
INFORMATION SCIENCES INSTITUTE

Los Angeles, USA
Apr 2021 - Present / Jan. 2019 - May 2019

- Collaborated on the Model INTegration (MINT) project, which combines models from various disciplines, including hydrology, agriculture, economics, and social sciences, to run simulations predicting the consequences of actions or policies in specific geographic regions. This work had significant applications, such as in the assessment of food insecurity in Ethiopia (1.2 millon simulations), allowing experts to simulate food production.
- Developed services (APIs, pipelines, workflows) to integrate data from different sources using Python, FastAPI, Express, and PostgreSQL.
- Created Helm charts for deploying services in Kubernetes clusters, such as Information Science Institute, San Diego Supercomputer Center, and Texas Advanced Computing Center.
- Maintained and improved CI/CD pipelines using GitHub Actions.
- Deployed and managed authentication services using Keycloak.
- Integrated a new execution system for running simulations in HPC clusters via APIs.

Research Programmer
INFORMATION SCIENCES INSTITUTE

Los Angeles, USA
Jul. 2019 - Oct. 2020

- Collabrate and develop in the Model INTegration project (MINT), MINT project combine existing models from various disciplines-including hydrology, agriculture, economics and social sciences-and run simulations to predict the consequences of actions or policies in specific geographic regions.

Part-time Teacher
COMPUTER SCIENCE DEPARTMENT

Valparaíso, Chile
Jul 2016 - Dec 2018

- Proposed and teach a course on Software Deployment on Linux, covering tools such as Docker, Kubernetes, AWS, GitHub Actions, Django, PHP, and Nginx. This course equips students with practical skills for deploying applications.
- Teach the Operating Systems course, where students learn core concepts of operating systems through practical exercises in a Linux environment and related DevOps tools.

DevOps Engineer
CHILEAN VIRTUAL OBSERVATORY (CHIVO)

Valparaíso, Chile
Jan 2018 - May 2018

- Worked on the FONDEF IT15I10041 project to implement a virtual observatory in Chile, adhering to standards and protocols defined by the International Virtual Observatory Alliance (IVOA).
- Proposed and implemented a cloud service for astronomers to use Jupyter notebooks in a high-performance processing environment using Docker Containers and Kubernetes.

Systems Engineer
LINETS

Santiago, Chile
Jan. 2014 - Mar. 2016

- Managed system administration for 400 servers, including troubleshooting, configuration, database administration, and optimization.
- Worked with OpenStack to build the first OpenStack deployment in Chile, supporting Beebop, the first public cloud in the country.
- Automated OpenStack deployment using Docker Containers and Ansible playbooks.
- Implemented shared storage for the public cloud using Ceph, a distributed storage system designed for performance, reliability, and scalability.

Systems Administrator
COMPUTER SCIENCE DEPARTMENT

Valparaíso, Chile
Aug. 2011 - Oct. 2014

- Administered internal servers, ensuring the availability of services for students and faculty.

Projects

DockerPedia   *Valparaíso, Chile*

CREATOR   *Feb. 2018 - March 2020*

- DockerPedia automatically describes the software components of Docker images and their vulnerabilities using Clair.
- Dockerpedia provides a visualization tool, which uses the available data, to help Docker users search and compare between different Docker images, allowing them to find software distributions which fit their needs and monitor the state of Docker repositories over time. The project is available at https://dockerpedia.inf.utfsm.cl.

Education

M.Sc. in Computer Engineering   *Valparaíso, Chile*

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA   *Mar. 2017 - Dec 2018*

- Thesis: Towards reproducibility of computational environments for Scientific Experiments using Container-based virtualization.
- GPA: 97 (on a 0-100 scale)

Computer Science Engineering   *Valparaíso, Chile*

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA   *Mar. 2010 - Jan. 2016*

- Undergraduate project: Evaluation of Kubernetes (v1.0.6), an orchestration system for Docker Containers.

Skills

Programming Languages

PYTHON, JAVASCRIPT, TYPESCRIPT, JAVA, BASH

- Proficient in developing applications, automating tasks, and analyzing data with these languages.

Backend Development

LOOPBACK (NODE.JS), FASTAPI, EXPRESS, POSTGRESQL

- Capable of developing robust server-side applications and managing databases effectively.

Frontend Development

REACT, GRAPHQL, FIGMA

- Experienced in building dynamic and scalable web applications with modern frameworks and libraries.

DevOps Tools

DOCKER, KUBERNETES, GITHUB ACTIONS, ANSIBLE, HELM

- Experienced in containerization, orchestration, continuous integration, and deployment.

Cloud Platforms

AWS

- Experience in deploying and managing applications on AWS.

RDF, OWL, Neo4j Graph Database, SPARQL

SEMANTIC WEB

- Experience in developing and querying semantic web applications.

Presentations

DockerPedia: A knowledge graph of Docker Images.   *Santiago, Chile*

PRESENTER FOR STARSCONF   *Nov. 2018*

- DockerPedia is an RDF linked dataset that stores the information about Docker images hosted in Docker Hub. We present DockerPedia in the Starsconf; the most significant technological event in Chile and one of the most important of South America.

Reproducibility of computational environments for Scientific Experiments using Container-based virtualization   *Monterey, California, USA*

PRESENTER FOR SEMSCI 2018: ENABLING OPEN SEMANTIC SCIENCE   *Oct. 2018*

- We propose to use containers for distributing software experiments throughout software images and an annotation system that describes these software images.

Docker security: Using Containers safely   *Valparaíso, Chile*

PRESENTER FOR SECURITY TALKS UTFSM   *Jul. 2018*

- An overview of the Docker security best practices to consider in your deployment.