CHRISTIAN ARIZA-PORRAS

Data Architect

Christian Ariza Porras is a Data Architect at The Water Institute, where he focuses on data management and analysis. With a background in academia and experience as a technical lead, advisor, researcher, and developer, Christian leverages his expertise to help organizations maximize the value of their data. He is a certified Apache Spark 2.4 developer with Python 3 and skilled in Python, Java, and shell scripting, among other programming languages.

Christian's areas of interest include information engineering, big data, linked data, software architecture, and creative problem solving. He has previous experience implementing a platform based on the Open Data Cube, allowing Colombian environmental analysts to access and process Analysis Ready Data, centralizing preparation steps, and maintaining lineage tracking for reproducibility and reusability.

At The Water Institute, Christian is involved in several significant projects, including the Louisiana Watershed Initiative; Texas General Land Office, river basin flood study; and SmartPort.

PROFESSIONAL EXPERIENCE

2021–Present: Data Architect, The Water Institute

2019–2020: CMS Experiment Monitoring CAT-A, CERN Switzerland

2021–Present: Adjunct Professor, Universidad de los Andes, Colombia

2015–2018: Instructor, Universidad de los Andes, Colombia

2012–2014: Doctoral Teaching Assistant, Universidad de los Andes, Colombia

2011–2012: Professional Project Assistant, Universidad de los Andes, Colombia

2010–2011: Graduate Assistant, Universidad de los Andes, Colombia

2008–2010: Web Developer, Grupo de consultoría informática GCI Ltda., Colombia

2008: Developer, Pointmind Ltda., Colombia

ORGANIZATION ROLE

Data Architect

PROJECT ROLE / FOCUS AREAS

Information engineering

Software architecture

Big data

Linked data

Data mining

EDUCATION

MS Systems and Computing Engineering, Universidad de Los Andes, 2011

BS Systems Engineering Universidad Nacional de Colombia, 2008

PROFESSIONAL MEMBERSHIP

Data Visualization Society

SELECTED PROJECTS

SmartPort & Resilience Center. *The Water Institute. (Ongoing). Data Architect.* Development of a platform collecting near-continuous vessel geospatial data (IOT) and high-resolution repeat multibeam bathymetry to develop spatiotemporal machine learning for shoaling forecasts at the Port of New Orleans and other ports along the Mississippi River. The application will enable decision-makers to anticipate and plan dredging operations (e.g., predictive maintenance).

CDCOL. *(2015–2018). Technical lead.* Environmental analysts' and researchers' time is an expensive and scarce resource that should be used efficiently. Creating analysis products from remote sensing images involves several steps that take time and can be either automatized or centralized. Among all these steps, the product's lineage and reproducibility must be assured. CDCol is a geoscience data cube that addresses these concerns and fits the analysis needs of Colombian institutions and the forest and carbon monitoring system.

CMS Experiment Monitoring Architecture. *(2019–2020). Developer/Operator.* The globally distributed computing infrastructure required to cope with the multi-petabyte datasets produced by the Compact Muon Solenoid (CMS) experiment at the Large Hadron Collider (LHC) at CERN comprises several subsystems, such as workload management, data management, data transfers, and submission of users' and centrally managed production requests. To guarantee the efficient operation of the whole infrastructure, CMS monitors all subsystems according to their performance and status. Moreover, we track key metrics to evaluate and study the system's performance over time. The CMS monitoring architecture allows both real-time and historical monitoring of a variety of data sources.

SELECTED PUBLICATIONS

1. Christian Ariza-Porras, Valentin Kuznetsov, Federica Legger, Rahul Indra, Nikodemas Tuckus, Ceyhun Uzunoglu, on behalf of the CMS Collaboration. The evolution of the CMS monitoring infrastructure. EPJ Web Conf. 251 02004 (2021) DOI: 10.1051/epjconf/202125102004
2. Ariza-Porras, C., Kuznetsov, V. & Legger, F. The CMS monitoring infrastructure and applications. Comput Softw Big Sci 5, 5 (2021). https://doi.org/10.1007/s41781-020-00051-x
3. Ariza-Porras, Christian, Bravo, Germán, Villamizar, Mario, Moreno, Andrés, Castro, Harold, Galindo, Gustavo, Cabera, Edersson (2017). CDCol: A Geoscience Data Cube that Meets Colombian needs. Advances in Computing: 12th Colombian Conference.
4. Bravo, Germán, Castro, Harold, Moreno, Andrés, Ariza-Porras, Christian, Galindo, Gustavo (2017) Architecture for a Colombian Data Cube Using Satellite Imagery for Environmental Appliances. Advances in Computing: 12th Colombian Conference.
5. Moreno, Andrés, Ariza-Porras, Christian, Lago, Paula, Jiménez-Guarín, Claudia, Castro, H., Riveil, M (2014). Hybrid Model Rating Prediction with Linked Open Data for Recommender Systems. Communications in Computer and Information Science 475.
6. Rivera, S, Riveros, H, Ariza-Porras, Christian, Lozano, C, Donoso, Y. (2013). QoS-QoE Correlation Neural Network Modeling for Mobile Internet Services. The 2013 International Conference on Computing, Management and Telecommunications proceedings.
7. Lozano-Garzon, Carlos, Ariza-Porras, Christian, Rivera-Diaz, Sebastian, Donoso Horacio Riveros-Ardila, Yezid (2012). Mobile Network QoE-QoS Decision Making Tool for Performance Optimization in CriticalWeb Services. Abstracts of ICCCC.
8. Lozano, C., Ariza-Porras, Christian**,** Rivera, S., Riveros, H., Donoso, Y. (2012). Mobile Network QoE-QoS Decision Making Tool for Performance Optimization in Critical Web Service. International Journal of Computers, Communications and Control 7: 892–899.