

ANDRÉS CAMILO ZÚÑIGA-GONZÁLEZ

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Updated June 2024

EDUCATION

PhD in Artificial Intelligence for Environmental Risk Oct 2023 - present
University of Cambridge - United Kingdom

MRes Environmental Data Science Oct 2022 - Sep 2023
University of Cambridge - United Kingdom
Thesis: *Improving Urban Tree Management Using High-Resolution Satellite Data*

M.Sc. Biological Sciences - Biology Focus Aug 2017 - Dec 2019
Universidad de los Andes - Colombia
Thesis: *Characterization of Methane Production of a Páramo Peatbog in Colombia throughout the Holocene*

B.Sc. Biology, Universidad de los Andes - Colombia Jan 2012 - Dec 2016
Thesis: *First record of Ancient DNA from Wood of the Last Glacial Period of the Tropical Andes of Colombia*

B.Sc. Microbiology, Universidad de los Andes - Colombia Jan 2012 - Dec 2016

Minor in Geography, Universidad de los Andes - Colombia Jan 2012 - Dec 2016

RESEARCH AND WORK EXPERIENCE

Data Scientist, DataLeik - Colombia Dec 2021 - Aug 2022
Develop machine learning models, dashboards and APIs using R and Python for Home Capital, a Colombian proptech. These included writing modules for different microservices and linking them through AWS.

Data Analyst, DataLeik - Colombia Aug 2021 - Nov 2021
Web scrape and organize data from real state marketplaces for further integration in a Data Base System. Develop visualization tools for data exploration.

Research Assistant, Universidad de los Andes - Colombia Nov 2020 - Jan 2021
Worked at the Tropical Palinology and Palaeocology Lab on several projects including: building the lab website; building ^{14}C dates Bayesian models and age-depth models using R of Colombian samples from marshes and páramos; analyzing stable isotopic signatures and lipid biomarkers of sediments.

Research Assistant, Universidad de los Andes - Colombia Mar - May 2019
Worked at the Tropical Palinology and Palaeocology Lab modeling ^{14}C dates of archaeological and volcano samples of Colombia and Ecuador from the last 10.000 years to understand the effect of eruptions on human settlements. This was done using a set of R packages for meta-analyses of carbon-dated ages.

Research Assistant, Universidad de los Andes - Colombia Feb - Jul 2017
Worked at the Palinology and Palaeocology Lab on the protocol for the extraction and amplification of ancient DNA from wood samples of more than 70.000 years from Colombia.

Research Assistant, Cornell University - USA Jun - Aug 2016
Worked at the Bergstrom Lab from the College of Agricultural Sciences modelling and statistical analysis of the epidemiological assessment of the Switchgrass (*Panicum virgatum*) Head Smut (*Tilletia*

maclaganii) both from in-field and lab experiments. This was part of a scholarship for a Summer Research Internship awarded by Universidad de los Andes.

TEACHING EXPERIENCE

Inference and Informatics, Universidad de los Andes - Colombia *Jan - Jun 2021*

Introduced students from the biological sciences undergraduate programs and other engineering programs to the core concepts of inferential statistics and probability using R, as well as some bioinformatics tools and pipelines using the Linux CLI. Taught and designed weekly lectures and activities with applied examples in the natural and physical sciences.

Cell Biology Laboratory, Universidad de los Andes - Colombia *Aug 2019 - May 2020*

Taught the basics of the scientific method to sophomore students and how to apply concepts from theoretical lectures to experiment-based workshops about several aspects of biology, ranging from microscopy to species diversity. Designed short home experiments to promote empirical thinking on sophomore students of Biological Sciences. Adapted some of the experiments and classes to virtual format. In addition, I designed and assessed questions for a knowledge exam intended for Biology and Microbiology undergrads.

Biostatistics, Universidad de los Andes - Colombia *Aug - Dec 2019*

Introduced students from the biological sciences undergraduate programs to the use of statistics in research using the R programming language. Taught weekly lectures and workshops with applied examples using a series of R packages.

Cell Biology, Universidad de los Andes - Colombia *Aug 2017 - Dec 2018*

Introduced students to theoretical concepts of life sciences, including evolution, taxonomy, molecular biology and applications in different areas. Directed workshops, lectures and exams.

CERTIFICATIONS

Remote Sensing Image Acquisition, Analysis and Applications, IEEE GRSS and University of New South Wales - Australia *Jun 2021*

Remote course on the theory behind remote sensing and machine learning techniques in Earth Observation.

Data Science For All, Correlation One - USA *Nov 2020*

12-week course on advanced Data Science Techniques funded by Colombia's Ministry of Technology.

Tensorflow Developer Professional Certificate, Deeplearning.ai - USA *Oct 2020*

4-course Certificate about the use of Tensorflow on Deep Learning Models through the Coursera Platform.

Tensorflow: Data and Deployment Specialization, Deeplearning.ai - USA *Oct 2020*

4-course Specialization about deployment of Tensorflow on different devices through the Coursera Platform.

Data Science Specialization, Johns Hopkins University - USA *Ago 2020*

10-course Specialization about data analysis using R through the Coursera Platform.

Discrete Mathematics for Computer Science Specialization, National Research University Higher School of Economics - Russia *Ago 2020*

5-course Specialization about discrete mathematics through the Coursera Platform.

Deep Learning Specialization, Deeplearning.ai - USA *Jul 2020*

5-course Specialization about deep learning and artificial intelligence through the Coursera Platform.

SKILLS

Programming Languages and Frameworks

Proficient in Microsoft Office Suite (Excel, Word, Powerpoint), R, Python, Java, Javascript, HTML5, CSS, D3.js, LaTeX, UNIX Shell, SQL, Git, Docker, API REST, QGIS, ArcGIS Pro, Google Earth Engine and AWS (EC2, S3, SQS and RDS).

Languages

Native Spanish, fluent English (C1 Academic IELTS) and basic communication skills in French.

GRANTS AND SCHOLARSHIPS

Minciencias Cambridge Scholarship, Cambridge Trust - United Kingdom

May 2022

Scholarship for PhD studies at the University of Cambridge jointly awarded by the Cambridge Trust and the Ministry of Sciences of Colombia.

Colombia Biodiversa, Fundación Alejandro Ángel Escobar - Colombia

Jan 2019

National grant awarded for the funding of the project *Metabarcoding of Methanogen Communities of a Páramo Peatbog throughout the Holocene*.

Early Career Grant, National Geographic Society

Nov 2018

International grant awarded for the funding of the project *Metabarcoding of Methanogen Communities of a Páramo Peatbog throughout the Holocene*.

Proyecto Semilla, Universidad de los Andes - Colombia

Jul 2018

University grant awarded for the funding of the project *Metabarcoding of Methanogen Communities of a Páramo Peatbog throughout the Holocene* and assistance to a scientific meeting.

Master Teaching Assistantship, Universidad de los Andes - Colombia

Aug 2017 - Dec 2019

University grant to cover full tuition and living expenses for the duration of the Master of Biological Sciences on the basis of academic and research merit.

Summer Research Internship Grant, Universidad de los Andes - Colombia

Jun 2016

Research grant awarded by Universidad de los Andes in order to work on research at Cornell University.

SCIENTIFIC MEETINGS AND EVENTS

European Geosciences Union General Assembly, EGU 24 - Vienna, Austria

April 2024

PICO: *Green Urban Equity: Analyzing the 3-30-300 Rule in UK Cities and Its Socioeconomic Implications*

American Geophysical Union Fall Meeting, AGU 100 - San Francisco, USA

Dec 2019

Poster: *Metabarcoding of Methanogen Communities of a Páramo Peatbog throughout the Holocene*

Past Global Changes Open Science Meeting, 5th PAGES OSM - Zaragoza, Spain

May 2017

Poster: *Ancient DNA from Subfossil Wood in the Tropical Andes of Colombia*

PUBLICATIONS

- N. Melissa M. Medina, Francisco W. Cruz, Amos Winter, Haiwei Zhang, Angela Ampuero, Mathias Vuille, Víctor C. Mayta, Marília C. Campos, Verónica Marcela Ramírez, Giselle Utida, **Andrés Camilo Zúñiga**, Hai Cheng. (2023). Atlantic ITCZ variability during the Holocene based on high-resolution speleothem isotope records from northern Venezuela. *Quaternary Science Reviews*. <https://doi.org/10.1016/j.quascirev.2023.108056>
- Ramírez-Valencia, V., Paez-Reyes, M., Salgado-Bonnet, J., Sangiorgi, F, **Zúñiga-González, A. C.**, Amézquita, A., Ibarra-Avila, H., & González-Arango, C. (2021). Distribution of organic-walled dinoflagellate cysts in surface sediments of the southern Caribbean and the eastern tropical Pacific and its environmental implications. *Marine Micropaleontology*. <https://doi.org/10.1016/j.marmicro.2021.102000>