

Luan Carlos de S. M. Ozelim

ALGORITHMIC INFORMATION THEORY · MACHINE LEARNING · STATISTICAL MODELING · CIVIL & GEOTECHNICAL ENGINEER · D.Sc.

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Summary

Holds a degree in Civil Engineering and a PhD in Geotechnical Engineering from the University of Brasília (UnB), being recognized by the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES) as the youngest student to obtain a doctoral degree in Brazil (22 years, 1 month, and 6 days), across all fields of study. Currently holds the position of Senior Research Collaborator at UnB, where he was granted four postdoctoral fellowships. He also conducted postdoctoral research at the Aeronautics Institute of Technology (ITA), São José dos Campos, where he held the position of Research Collaborator, and maintains an active affiliation with University College London as an Honorary Lecturer.

His current research lies in algorithmic information theory and its applications to machine learning, covering algorithmic complexity and algorithmic probability estimation on explicit reference machines, differentiable complexity measures usable inside learning systems, and the evaluation of language models against exactly computable inductive standards. Since 2024 he has worked as an Artificial Intelligence consultant at Oxford Immune Algorithmics, collaborating on algorithmic information dynamics and on AI applications in immunology and medical diagnostics.

He has worked intensively with deep learning, Transformer architectures, and the fine-tuning and large-scale evaluation of Large Language Models, including the development of automated medical diagnostic systems for clinical data analysis and interpretation. The same computational and statistical methods underpin his engineering research, in particular the modeling of geotechnical phenomena and R&D projects on intelligent monitoring of structures and mining tailings.

He has published over seventy articles in international journals addressing Theoretical Computer Science, Pure and Applied Mathematics, Statistics, Biomedicine, Network Engineering, and Civil Engineering (Hydraulics, Geotechnics, and Geo-environmental Engineering). His studies integrate mathematical, statistical, and computational tools for modeling experimental data and complex physical phenomena. He has been working as a Civil Engineer at the Brazilian Federal Senate since 2014, accumulating over 10 years of experience in the design and management of infrastructure projects.

Education

University of Brasília

Brasília, Brazil

POSTDOCTORAL FELLOWSHIP IN GEOTECHNICAL ENGINEERING

Jun. 2024 - May 2025

- Got a Senior Scholarship from the National Council for Scientific and Technological Development (CNPq) to carry out his studies.

University of Brasília

Brasília, Brazil

POSTDOCTORAL FELLOWSHIP IN GEOTECHNICAL ENGINEERING

Jun. 2022 - Nov. 2023

- Got a Senior Scholarship from the National Council for Scientific and Technological Development (CNPq) to carry out his studies.

Aeronautics Institute of Technology

São José dos Campos, Brazil

POSTDOCTORAL FELLOWSHIP IN AERONAUTICAL INFRASTRUCTURE ENGINEERING

Jul. 2022 - Jun. 2023

University of Brasília

Brasília, Brazil

POSTDOCTORAL FELLOWSHIP IN GEOTECHNICAL ENGINEERING

Jul. 2018 - Jul. 2019

- Got a Scholarship from the National Council for Scientific and Technological Development (CNPq) to carry out his studies.

University of Brasília

Brasília, Brazil

POSTDOCTORAL FELLOWSHIP IN GEOTECHNICAL ENGINEERING

Nov. 2016 - Oct. 2017

- Got a Scholarship from the National Council for Scientific and Technological Development (CNPq) to carry out his studies.

University of Brasília

Brasília, Brazil

D.Sc. IN GEOTECHNICAL ENGINEERING

Aug. 2012 - July. 2014

- Got a Scholarship from the Coordination for the Improvement of Higher Education Personnel (CAPES) to carry out his studies.
- Got a Grade Point Average (GPA) of 5.0/5.0

University of Brasília

Brasília, Brazil

B.Sc. IN CIVIL ENGINEERING

Aug. 2008 - July. 2012

- Got several Scholarships from the Ministry of Education (MEC) National Council for Scientific and Technological Development (CNPq) and University of Brasília (UnB) during his undergraduate studies.
- Got a Grade Point Average (GPA) of 4.72/5.0

Work Experience

University College London - UCL

London, UK

HONORARY LECTURER

Jun. 2025 - today

- Has been an Honorary Lecturer in the Dept of Civil, Environ & Geomatic Eng.

Oxford Immune Algorithmics

Reading, UK

AI CONSULTANT

Feb. 2024 - today

- Has been an AI Consultant directly working with the sole founder, previous CEO and current Chief Visionary Officer of Oxford Immune Algorithmics, Prof. Dr. Hector Zenil.

Aeronautics Institute of Technology

São José dos Campos, Brazil

RESEARCH COLLABORATOR

Jul. 2023 - Jun. 2026

- Research topics include: numerical, statistical and mathematical modelling of experimental data; machine learning and big data; deep learning; constitutive modelling; inverse modelling

University of Brasília

Brasília, Brazil

SENIOR RESEARCH COLLABORATOR

Oct. 2025 - Today

- Co-advised one student on his Master thesis in Geotechnical Engineering
- Co-advised one student on his Doctoral dissertations in Geotechnical Engineering
- Research topics include: numerical, statistical and mathematical modelling of experimental data; machine learning and big data; deep learning; constitutive modelling

University of Brasília

Brasília, Brazil

FULL RESEARCH COLLABORATOR

May. 2020 - Oct. 2025

- Co-advised three students on their Master thesis in Geotechnical Engineering
- Co-advised two students on their Doctoral dissertations in Geotechnical Engineering
- Research topics include: numerical, statistical and mathematical modelling of experimental data; machine learning and big data; deep learning; constitutive modelling

University of Brasília

Brasília, Brazil

JUNIOR RESEARCH COLLABORATOR

Nov. 2015 - Dec. 2019

- Co-advised one student on his Master thesis in Geotechnical Engineering
- Co-advised one student on his Bachelor thesis in Geotechnical Engineering
- Research topics included: numerical, statistical and mathematical modelling of experimental data; 3d printing, machine learning and big data

University Center of Brasília (UnICEUB)

Brasília, Brazil

ASSOCIATE PROFESSOR

Ago. 2014 - Dec. 2015

- Taught Calculus 1, Calculus 3, Linear Algebra, Physics 1 and Soil Mechanics 1
- Co-advised one student on his Bachelor thesis in Geotechnical Engineering

Federal Senate of Brazil

Brasília, Brazil

LEGISLATIVE ANALYST - CIVIL ENGINEERING

May. 2014 - Present

- Worked as a Project Manager for several engineering/architectural designs
- Worked as a Maintenance Engineer, focusing on Civil Engineering issues
- Worked as a Civil Engineering designer. The designs included urban drainage, slope stability and retaining walls design, pavement design, structural design, among others
- From July 2021 until today is the Coordinator of the Coordination of Infrastructure Designs and Works
- From April 2020 until July 2021 was an Assistant Manager at the Coordination of Infrastructure Designs and Works
- From September 2019 until April 2020 was the Chief of the Civil Maintenance Unit
- From March 2019 until September 2019 was the Director of the Infrastructure Department. This area is responsible for all the Engineering and Architecture designs and works of the Federal Senate of Brazil
- From June 2017 until March 2019 was the General Coordinator of the Infrastructure Department, which is equivalent to a Vice-Director position. This area is responsible for all the Engineering and Architecture designs and works of the Federal Senate of Brazil
- From October 2015 until June 2017 was the Coordinator of Maintenance, which was responsible for the Maintenance of all the Built Complex of the Senate with respect to all the Engineering subjects (Civil, Electrical and Mechanical)
- From June 2014 until October 2015 was the Chief of the Civil Maintenance Unit

Reviewing & Publishing

Editorial Roles

Journals

ACADEMIC EDITOR

2023 - 2025

- Was part of the editorial board of PLoS One

Academic Reviewing

Journals & Databases

REVIEWER

2011 - Present

- Is part of the board of reviewers of several International journals, namely: PLoS One, the International Journal of Geomechanics (ASCE), Entropy, Patterns, GEOSYNTHETICS INTERNATIONAL, Structural Control and Health Monitoring, Symmetry, CHEMBIOENG REVIEWS, Mathematics, Sustainability, Frontiers Of Structural And Civil Engineering, Advanced Studies in Contemporary Mathematics (Kyungshang), Alexandria Engineering Journal, REM - INTERNATIONAL ENGINEERING JOURNAL, Scientia Iranica, European Journal of Soil Science, Journal of Zhejiang University SCIENCE A, Flow Measurement and Instrumentation, Engenharia Sanitária e Ambiental, Energies, Axioms, AIMS Mathematics
- Is a reviewer of scientific documents for the Zentralblatt MATH and Mathematical Reviews (AMS) databases

- Has published 70 academic papers in high impact journals. These are presented below.
- Also published 4 book chapters and 20 peer-reviewed full papers on the proceedings of national and international conferences. For simplicity, these publications will be omitted.

References

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