Rodrigo H. Avaria Saldías

Curriculum Vitae

Personal Information

Date of Birth	*19th December 1982*
Nationality	Chilean
Address	222 General Cruz st, Valparaíso, Chile.
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Education

2023 **PhD Candidate in Statistics**, Faculty of Science, University of Valparaíso.

2021 **Diploma in Data Science**, School of Computer Science, Faculty of Engineering, University of Valparaíso.

2017-2020 **PhD in Bioinformatics and Computational Biology**, Faculty of Science, University of Valparaíso (Incomplete).

2008-2014 **Bachelor of Science in Mathematics**, Faculty of Science, University of Chile.

5.4/7.0 Passed with Distinction Ranking 7/14

Experience

Employment

2022 **Data Engineer**, Fondef Project Id20i10332 - Artificial Intelligence System for Support in Diagnosis and Prioritization of Mammographic Exams (Part-time: Design and Implementation of Image Management Module in KPI Indicators as Visual Interface for Health Professionals)

2016-2017 **Research Assistant at Ciencias para la Vida Foundation**, Computational Biology Lab, Santiago, Chile (Full-time: Stochastic Simulation and Game Theory)

2017 **Scientific Academies Tutor**, Ciencia Joven Foundation (Part-time: Guidance and Support for High School Teachers in Scientific Topics).

2015-2016 **Research Assistant**, Center for Advanced Research in Education, University of Chile (Part-time: Collaboration in Design, Programming, and Execution of Cognitive Experiments)

2015 **Technical Support Staff** for Research and Project Development, Center for Advanced Research in Education, University of Chile (Part-time: Transcription and Classification of Audio Recordings according to Context and Present Practices)

Teaching

University of Valparaíso.

- *Part-Time Lecturer:*
  - "Design of Educational Interventions across the Life Cycle", Faculty of Pharmacy, School of Nutrition, Spring 2023 and 2024.
  - "Community Nutritional Intervention focusing on Family Health", Faculty of Pharmacy, School of Nutrition, Autumn 2023 and 2024.
  - "Computing", Faculty of Science, Department of Statistics, Autumn 2023
  - "Data Mining", Faculty of Science, Department of Statistics, Autumn 2022
  - "Probability and Statistics", Faculty of Engineering, School of Biomedical Engineering, Autumn 2021.

University of Chile:

- *Assistant Professor:*
  - "Experimentation and Modeling for the Study of Cognition and Education", Faculty of Physical and Mathematical Sciences, Spring 2010
- *Teaching Assistant:*
  - "Problem Solving and Arithmetic for 4th, 5th, and 6th grade" - Center for Mathematical Modeling, Faculty of Physical and Mathematical Sciences, Summer 2016 for teachers.
  - "Mathematics", for the Design major, Faculty of Architecture and Urbanism, 2015.
  - "Experimentation and Modeling for the Study of Cognition and Education", Faculty of Physical and Mathematical Sciences, Autumn 2012.
  - "Invertebrate Zoology", Faculty of Science, Autumn 2008.
  - "Adaptation to the Environment" (Ecophysiology), Faculty of Science, Autumn 2004.

Pontifical Catholic University of Chile:

- *Assistant Professor:*
  - "Psychobiology", School of Psychology, Spring 2009 and 2010.

Research

2016-2017 **Research Assistant**, Project 'Stochastic Social Simulation', USA Air Force Office of Scientific Research Award No FA9550-16-1-0111 and FA9550-16-1-0384. Principal Investigator: Tomás Perez-Acle PhD.

2016 **Research Collaboration** in the area of learning, cognition, and "IT+" project. Basal Fund FB0003 CIAE.

2015-2016 **Research Assistant**, Project: *"Cognitive elements that support learning: Experimental and modeling studies on memory and inhibitory capacities"*. CONICYT PIA CIE-05. Principal Investigator: Pablo Dartnell PhD.

2015-2016 **Research Assistant**, Project: *"Use of verbal and nominal agreement during language processing in Spanish and English-speaking children and adults"*. (in collaboration with Penn State University and Michigan State University). CONICYT PIA CIE-05. Principal Investigator: Carolina Holtheuer PhD.

2013-2015 **Research Assistant**, Project: *"Generic meanings in Spanish: Exploring the early stages of reasoning"*. Fondecyt Iniciación 11121114. Principal Investigator: Carolina Holtheuer PhD.

2011-2012 **Research Assistant**, Project: *"Genericity and the interpretation of the ser and estar copulas in child Spanish"*. CONICYT PIA CIE-05. Principal Investigator: Carolina Holtheuer PhD.

2010 Collaboration in the Psychophysiology lab, P. Catholic University of Chile, under the supervision of Claudio Tapia PhD.

2009-2012 **Research Assistant**, Project: "Factors involved in the acquisition and development of specific mathematical knowledge for the teaching task in Chilean teachers". Catholic University of Chile. Fondecyt 1090292. Co-Investigator: Marcela Peña.

2009-2011 **Research Assistant**, Project: *"Study of the relationship between language development and symbolic thinking in children with and without cognitive risk"*. Catholic University of Chile. Fondecyt 1090662. Principal Investigator: Marcela Peña.

Publications

July 2023 Towards Trustworthy Machine Learning based systems: Evaluating breast cancer predictions interpretability using Human Centered Machine Learning and UX Techniques, $DOI : 10.1007/978 - 3 - 031 - 36004 - 6\_73$

April 2023 Volatility Forecasting using Deep Recurrent Neural Networks as GARCH models, Computational Statistics, $DOI : 10.1007/s00180 - 023 - 01349 - 1$

November 2017 "Stochastic simulation of multi-scale complex systems with PISKaS: A rule-based approach", Biochemical and Biophysical Research Communications, $DOI : 10.1016/j.bbrc.2017.11.138$

March 2017 "The role of attentional networks in the access to the numerical magnitude of fractions in adults", Estudios de Psicología, $DOI : 10.1080/02109395.2017.1295575$

Courses, Conferences, and Seminars

June, 2025 **Poster presentation:** PINNing the Balloon: A physically informed reconstruction of the Haemodynamic Response Function, *OHBM 2025, Brisbane, Australia.*

January, 2025 **XII CTS-Chile Meeting**: Chilean Network for Studies in Science, Technology, and Society. Santa Maria University, Valparaiso, Chile.

November, 2024 **Poster Presentation**: PINN Recostruction for brain HRF. Interdisciplinary Symposium on Engineering and Precision Medicine. University of Valparaiso, Valparaiso, Chile.

January, 2024 **ComputeFest 2024**: Physics-Informed Neural Networks (PINNs). Harvard Online.

January 2023 **Oral Presentation**: Machine learning reconstruction for brain hemodynamic response function. *Medical Imaging and AI for Healthcare*, Pontifical Catholic University of Chile, Santiago, Chile.

November 2022 **BrainModes 2022**: Brain health and multiscale brain dynamics, Valparaiso, Chile

November 2022 **SIPAIM 20222**: 18^{th} International Symposium on Medical Information Processing and Analysis, Universidad Santa Maria, Valparaiso, Chile.

January 2019 **V Latin American Summer School on Computational Neuroscience**: Complex Systems and Network Connectivity. Valparaiso, Chile.

August 2018 **Oral Presentation**: "A generative model of non-stationary brain dynamics" W. El-Deredy, D. Araya, R. Avaria, *1st Chilean Conference on Computational Neuroscience*, University of Valparaiso, Valparaiso, Chile.

February 2017 **Oral Presentation**: "Baby steps into computational Sociology: From Stochastic Simulation of molecules to the Prisoner's Dilemma". R. Avaria, T. Perez-Acle. *International Conference "Social Psychology, Culture and Politics"*, University of Buenos Aires, Buenos Aires, Argentina.

February 2017 "Digital Influence meeting", University of Buenos Aires, Buenos Aires, Argentina

August 2016 **Poster Presentation**: "On the mental Processing and Re-presentation of Fractions: Is there a SNARC Effect?". R. Avaria, D. Gómez, A. Kallai, D. Landy, P. Dartnell, *40th Conference of the International Group for the Psychology of Mathematics Education* (PME 40), Szeged, Hungary.

April 2016 **Poster Presentation**: "What about the mental representation of fractions? Do they elicit a SNARC effect?". R. Avaria, D. Gómez, A. Kallai, D. Landy, P. Dartnell, *1st Symposium "Genes, Brain and Behavior", University of Chile,* Santiago, Chile.

August 2013 **"Behaviour 2013,** - *International Ethological Conference Association for the Study of Animal Behaviour",* Newcastle Gateshead, England.

January 2010 **1st Summer School,** *" Brain Clocks and Rhythms"*, Catholic University of Chile – Max Planck Institute, Santiago, Chile.

January 2007 **5th Summer School,***Institute of Complex Systems of Valparaíso*, Power Laws, Cellular Automata, Valparaiso, Chile.

January 2006 **4th Summer School,***Institute of Complex Systems of Valparaíso*, Theoretical Informatics, Ecology, and Cognitive Sciences, Valparaiso, Chile.

Awards, Skills & Languages

Scholarship FIB-UV PhD Scholarship 2025

Best Poster presentation Interdisciplinary Symposium on Engineering and Precision Medicine, November 2025

Funding iHEALTH Project FUNDING: "Machine learning reconstruction for brain hemodynamic response function of the brain"

Scholarship CONICYT National PhD Scholarship: 21170453

Computer Skills

Basic	C/C++
Intermediate	PYTHON, R, Matlab, Power-Bi, Tableau, LaTeX, GNU-Linux, GIMP, ArchLinux, E-prime, EventIDE, Tobii eye tracker
Advanced	Microsoft Office, Microsoft Windows

Languages

Spanish	**Native Language**	
English	**Advanced**	*IELTS Certification: C1 (CEFR)*
Br-Portuguese	**Basic**	*B1 (CEFR)*
French	**Basic**	*A2 (CEFR)*

Rodrigo H. Avaria. August, 2025