

# Humberto Sandmann

*Computer Scientist & Professor*

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## PROFILE

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Computer scientist and professor with a D.Sc. from the University of São Paulo and a research stay at the Max Planck Institute for Dynamics and Self-Organization. My research bridges bio-inspired neural computing, nonlinear dynamics, and pattern recognition, investigating how biological neuronal mechanisms can inform computational intelligence. More than a decade of university teaching alongside senior industry practice in software architecture, artificial intelligence, and high-performance computing.

## RESEARCH INTERESTS

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- DeFi, smart contracts, and decentralized applications
- Small-world networks and complex systems
- Computation in large-scale systems
- Artificial intelligence and deep learning
- Nonlinear systems and network dynamics
- Synchronization of coupled oscillators

## EDUCATION

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**D.Sc., Electrical Engineering** 2007–2012

*Polytechnic School, University of São Paulo*

*Thesis* Spike patterns and computation in dynamical neural networks

*Advisor* Prof. Dr. Emílio Del Moral Hernandez

*DOI* [10.11606/T.3.2012.tde-05092012-165022](https://doi.org/10.11606/T.3.2012.tde-05092012-165022)

**D.Sc. Research Internship** 2009–2010

*Max Planck Institute for Dynamics and Self-Organization · Göttingen, Germany*

*Advisor* Prof. Dr. Marc Timme

*Note* Networks Dynamics Group — CAPES grant BEX 4076-09-5

**M.Sc., Electrical Engineering** 2003–2006

*Polytechnic School, University of São Paulo*

*Thesis* Prediction of time series using architecture based on neuro-fuzzy systems

*Advisor* Prof. Dr. Marco Túlio Carvalho de Andrade

*DOI* [10.11606/D.3.2006.tde-01042009-095125](https://doi.org/10.11606/D.3.2006.tde-01042009-095125)

**B.Sc., Computer Science** 1999–2002

*Faculdade de Engenharia Industrial (FEI) · São Bernardo do Campo, Brazil*

**Technician, Industrial Computation** 1996–1998

*Escola Técnica Jorge Street · São Caetano do Sul, Brazil*

## PUBLICATIONS

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E. Del-Moral-Hernandez, H. Sandmann, G. Araujo. **Context dependent pattern recognition — A framework for hybrid architectures bridging chaotic neural networks based on Recursive Processing Elements and symbolic information.** *Proc. International Joint Conference on Neural Networks (IJCNN), Atlanta, GA, USA, 2009*, pp. 663–670. doi:10.1109/IJCNN.2009.5179061

L. A. da Silva, H. Sandmann, E. Del-Moral-Hernandez. **A self-organizing architecture of recursive elements for continuous learning.** *Proc. IJCNN (IEEE World Congress on Computational Intelligence), Hong Kong, China, 2008*. doi:10.1109/IJCNN.2008.4634190

E. Del-Moral-Hernandez, H. Sandmann, L. A. da Silva. **Pattern recovery in networks of recursive processing elements with continuous learning.** *Proc. IJCNN, Budapest, Hungary, 2004*. doi:10.1109/IJCNN.2004.1379877

## ACADEMIC APPOINTMENTS & TEACHING

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**Inspur** — Associate Professor, Assistant Professor 2018–present  
*Platform, Microservices and APIs · Machine Learning · Neural Networks and Deep Learning · Cloud Computing · Design of Software · Coding Interviews · Foundations for Physical Communication*

**ESPM** — Associate Professor 2014–2025  
*Machine Learning · Applied Mathematics · Object-Oriented Programming · Software Quality · Statistics · Architecture and Operating Systems · Artificial Intelligence and Society*

**FIAP** — Associate Professor 2012–2015  
*Distributed Systems · MBA: Big Data & NoSQL Modelling · Data Structures and Algorithms · Databases (Oracle PL/SQL)*

**Toledo Prudente Centro Universitário** — Visiting Professor 2015–2015  
*MBA: Big Data and Machine Learning*

**Universidade Cruzeiro do Sul** — Associate Professor 2012–2013  
*Computer Architecture · Software Engineering · Mobile Programming (Android) · Databases*

**Universidade Nove de Julho** — Temporary Professor 2011–2011  
*Computer Architecture · Introduction to Programming · Web Programming*

**Polytechnic School, University of São Paulo** — Teaching Assistant 2008–2011  
*Experimental Pattern Recognition, Modeling and Neurocomputing · Modeling for Signal Processing: Neural Networks and Learning · Foundations of Computing Engineering Laboratory*

## PROFESSIONAL EXPERIENCE

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<b>H-Sandmann</b>	Founder	2006–present
<b>SelsanTech</b>	Co-Founder	2012–2023
<b>RockSpoon</b>	Senior Software Architect & Machine Learning Engineer	2018–2019
<b>Banco Votorantim</b>	Senior Consultant, Computational Optimization	2015–2016
<b>TecBan</b>	Senior Consultant, Computational Optimization	2011–2011
<b>ABN Amro Bank</b>	Senior Software Engineer / Architect	2006–2007
<b>Politec</b>	Senior System Analyst	2005–2006
<b>EverSystems</b>	Senior Software Engineer / Architect	2004–2005
<b>Central Online</b>	Senior System Analyst	2002–2003

<b>Datamace</b>	Senior System Analyst	1999–2002
<b>Heraeus Electro-Nite</b>	Computer Programmer	1998–1999

## GRANTS & FUNDING

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<b>CNPq</b>	Doctoral fellowship — grant I40632/2007-7	2007 – 2011
<b>CAPES</b>	Doctoral internship abroad (Max Planck Institute) — BEX 4076-09-5	2010
<b>CAPES (PAE)</b>	Teaching-assistantship fellowship — Polytechnic School, USP	2008, 2011
<b>FAPESP</b>	Teaching-assistantship fellowship — Polytechnic School, USP	2008

## CONFERENCE SERVICE

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<b>IJCNN 2020</b>	Reviewer	Glasgow, Scotland
<b>IJCNN 2019</b>	Program Committee & Reviewer	Budapest, Hungary
<b>IJCNN 2018</b>	Reviewer	Rio de Janeiro, Brazil
<b>IJCNN 2017</b>	Program Committee & Reviewer	Anchorage, AK, USA
<b>IJCNN 2015</b>	Reviewer	Killarney, Ireland

## PROFESSIONAL MEMBERSHIPS

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**IEEE — Institute of Electrical and Electronics Engineers** — Member #60216475

- Computational Intelligence Society (CIS) — member since 2004; Brazilian committee (2009; 2010–2012)
- Signal Processing Society (SPS) — 2005–2009
- Engineering in Medicine and Biology Society (EMBS) — 2005–2009

**INNS — International Neural Network Society** — Student member #3951

## LANGUAGES

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**Portuguese** — Native    **English** — Advanced    **German** — B1