SERGIO PONCE DE LEON

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RESEARCH INTERESTS

Consciousness science, AI interpretability & alignment, digital minds, complexity & information theory, philosophy.

RESEARCH PROFILE

Interdisciplinary researcher with a PhD in Cognitive and Information Sciences and 13+ years of product design and development experience. Senior Director of Applied AI at PMA Consultants, leading applied AI strategy and integration. Research combines experimental neuroscience, information-theoretic methods, computational modeling, and philosophy to investigate the relationship between complex dynamical systems and consciousness.

RESEARCH EXPERIENCE

University of California, Merced – Department of Cognitive and Information Sciences

Graduate Student Researcher — August 2025–Dec. 2025

- Designed and implemented pre-registered multimodal EEG research, including stimulus development and IRB approval
- Collected and analyzed multimodal EEG data using signal processing, complexity-based measurement methods, and Bayesian statistical modeling

PROFESSIONAL EXPERIENCE

PMA Consultants, LLC

Senior Director, Applied AI — 2026–Present

- Leading applied AI strategy across all business units, including the evaluation, development, and integration of AI solutions for multifunctional workflows
- Leading agentic AI orchestration R&D

Senior Advisor, Innovation Strategy (Part-Time) — 2021–2026
Senior Director, Product Management — 2019–2021
Director, Product Design & Development — 2016–2019
Senior Associate, UX Research & Design — 2014–2016
Associate, UI Design & Customer Support — 2013–2014
Senior Specialist, UI Design & Digital Marketing — 2011–2013
Specialist, Technical Writing & UI Design — 2009–2011

EDUCATION

University of California, Merced, School of Social Sciences, Humanities, and Arts

PhD, Cognitive and Information Sciences — 2026

- Dissertation (advised by Jeff Yoshimi): Consciousness, complexity, and silent neurons: Experimental and philosophical investigations for integrated information theory (IIT)

MS, Cognitive and Information Sciences — 2025

University of Michigan, School of Information

MS, Information — 2019

- Specializations: Human-Computer Interaction; Information Analysis and Retrieval

Washtenaw Community College

Non-degree-seeking coursework in mathematics & computer science — 2005, 2015

University of Michigan, College of Literature, Science, and the Arts

BS, Environment — 2008

- Specialization: Urban and Environmental Planning

PUBLICATIONS

Ponce de Leon, S., Backer, K. C., Monti, M. M., & Yoshimi, J. (in preparation). *Measuring conscious contents using EEG complexity: Visual and auditory stimulus processing*.

Ponce de Leon, S., Backer, K. C., Monti, M. M., & Yoshimi, J. (in preparation). *Measuring conscious contents using EEG complexity: Differences in phenomenology and behavior*.

Ponce de Leon, S., & Yoshimi, J. (in preparation). *Does Husserlian phenomenology support the axiomatic framework of integrated information theory (IIT)?*

Ponce de Leon, S., & Yoshimi, J. (2026). Integrated information theory (IIT) and the testability of the silent neuron predictions. *Neuroscience of Consciousness, 2026*(1), niag037. https://doi.org/10.1093/nc/niag037

Ponce de Leon, S., Backer, K. C., Monti, M. M., & Yoshimi, J. (2026). Measuring conscious contents using EEG complexity. *In principle acceptance of Version 6 by Peer Community in Registered Reports*. https://osf.io/msnzp

PATENTS

Gui Ponce de Leon, Vivek Puri, Seve Ponce de Leon, and **Sergio Ponce de Leon** (2023). *Schedule density zooming* (continuation). U.S. Patent No. 11,650,724.

Gui Ponce de Leon, Vivek Puri, Seve Ponce de Leon, and **Sergio Ponce de Leon** (2022). *Schedule density zooming*. U.S. Patent No. 11,487,415.

Gui Ponce de Leon, Seve Ponce de Leon, and **Sergio Ponce de Leon** (2020). *Project schedule display with graphical target overlay*. U.S. Patent No. 10,725,639.

RESEARCH FUNDING & FELLOWSHIPS

Templeton World Charity Foundation / Center for Open Science / Association for the Scientific Study of Consciousness

Funding Consciousness Research with Registered Reports (#0593) — January 2023–Dec. 2026

- Project: Investigated EEG complexity-based measures of consciousness in the context of visual and auditory stimulus processing, phenomenology, and behavior
- Total Funding: **$31,936 USD**

AWARDS

Association for the Scientific Study of Consciousness (ASSC)

ASSC 29 Student Travel Award — May 2026

ASSC 26 Student Poster Competition (**2nd place**) — June 25, 2023

- Project title: Detecting differences in conscious contents using EEG complexity measures

University of California, Merced – Department of Cognitive and Information Sciences (CIS)

CIS Summer 2026 Professional Development Award — May 2026

Mind Science

BrainStorm Neuroscience Pitch Competition **Semi-finalist** — June 2025

- Project title: Does brain activity cause consciousness? A TMS experiment

University of California, Merced – Graduate Division

MacKenzie Scott Graduate Student Supplemental Travel Award — May 2023

PUBLIC TALKS

Measuring conscious contents using EEG complexity: Visual and auditory stimulus processing, phenomenology, and behavior.

AMCS Models of Consciousness 2026 | Copenhagen, Denmark — October 12–16, 2026

Consciousness science: progress and problems

SBMT 21st Annual World Congress (**invited**) | Los Angeles, CA — March 15, 2024

Detecting differences in conscious contents using EEG complexity measures

UCLA Department of Psychology MontiLab (**invited**) | Zoom — December 11, 2023

PUBLIC TALKS (CONTINUED)

Integrated information theory and the testability of the silent neuron predictions
Monash University School of Psychological Sciences MoNoC/Tsuchiya Lab (**invited**) | Zoom — May 16, 2023

Does brain activity cause consciousness? A TMS experiment
UC Merced Department of CIS Weekly Brownbag | Merced, CA — April 10, 2023

Simulating the perturbational complexity index at the edge of chaos
UC Merced Department of CIS Annual Project Mini-Conference | Merced, CA — May 9, 2022

Philosophical and scientific foundations of integrated information theory
UC Merced Department of CIS Weekly Brownbag | Merced, CA — April 25, 2022

CONFERENCE & WORKSHOP POSTERS

Ponce de Leon, S., Backer, K. C., Monti, M. M., & Yoshimi, J. *Measuring conscious contents using EEG complexity: Visual and auditory stimulus processing, phenomenology, and behavior*.
Shin-Socrates | Lake Toya, Japan — Sep. 29–October 3, 2026
CogSci 26 | Rio de Janeiro, Brazil — July 22–25, 2026
ASSC 29 | Santiago, Chile — June 30–July 3, 2026

Ponce de Leon, S., & Yoshimi, J. *Does Husserlian phenomenology support the axiomatic framework of integrated information theory (IIT).*
ASSC 28 | Heraklion, Crete — July 6–9, 2025

Ponce de Leon, S., & Yoshimi, J. *Integrated information theory (IIT) and the testability of the silent neuron predictions*.
ASSC 27 | Tokyo, Japan — July 2–5, 2024

Ponce de Leon, S., Backer, K. C., & Yoshimi, J. *Detecting differences in conscious contents using EEG complexity measures*.
ASSC 26 | New York, NY — June 23–25, 2023
Aalto University 9th Science Factory: TMS–EEG Summer School & Workshop | Espoo, Finland — May 27–June 2, 2023

TEACHING EXPERIENCE

University of California, Merced – Department of Cognitive and Information Sciences
Teaching Assistant

- Philosophy of Cognitive Science – COGS 110/PHIL 110 (~53 students) — 01/2026–05/2026
- Philosophy of Cognitive Science – COGS 110/PHIL 110 (~45 students) — 01/2025–05/2025
- Introduction to Neural Networks in Cognitive Science – COGS 103 (~45 students) — 08/2024–12/2024
- Introduction to Phenomenology – PHIL 150 (~24 students) — 01/2024–05/2024
- Consciousness in Philosophy & Cognitive Science – COGS 177/PHIL 173 (55 students) — 08/2023–12/2023
- Philosophy of Cognitive Science – COGS 110/PHIL 110 (62 students) — 01/2023–05/2023
- Introduction to Neural Networks in Cognitive Science – COGS 103 (~30 students) — 08/2022–12/2022
- Computational Cognitive Neuroscience – COGS 123/CSE 173 (39 students) — 01/2022–05/2022
- Introduction to Philosophy – PHIL 001 (42 students) — 08/2021–12/2021

UNIVERSITY SERVICE

University of California, Merced – Department of Cognitive and Information Sciences (CIS)
Lab Manager, CIS Weekly Philosophy Lab Meetings — 09/2023–05/2025
Professional Development Officer, CIS Graduate Student Group — 08/2023–07/2024
Advisory Mentor, Mentorship for Undergraduates Program — 02/2024–05/2024
Organizer, CIS Weekly Brownbag Meetings — 01/2023–05/2023

SKILLS & LANGUAGES

Programming: Python, R, Git, JavaScript, HTML, CSS, MATLAB, SQL, PHP, C++
Data Analysis: Information-theoretic Methods, EEG Signal Processing (EEGLAB/ERPLAB), Bayesian Statistical Modeling, Hierarchical Regression, Time-series Analysis, Information Visualization
Machine Learning: Artificial Neural Networks, Natural Language Processing, Reinforcement Learning
Languages: English (Native), Spanish (Basic)

TRAINING & WORKSHOPS

The Canadian Institute for Advanced Research
CIFAR Neuroscience of Consciousness Winter School (Upcoming) | Cancun, Mexico — December 2–5, 2026

Qualia Structure
Shin-Socrates 2026 | Lake Toya, Japan — Sep. 29–October 3, 2026

Mediterranean Society for Consciousness Science (MESEC)
MESEC Winter School 2024 | Banyoles, Spain — March 19–23, 2024

Neuroscience School of Advanced Studies
Special Advanced Course: Integrated Information Theory of Consciousness | Venice, Italy — September 8–17, 2023

Aalto University School of Science, Department of Neuroscience and Biomedical Engineering
9th Science Factory: TMS–EEG Summer School and Workshop | Espoo, Finland — May 27–June 2, 2023

Scrum Alliance
Certified Scrum Product Owner — July 22, 2016