Renato Paredes Venero

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PROFILE

Computational Cognitive Neuroscientist. My focus is experimental research and computational modelling of the neural basis of human cognition and behaviour. Currently I work within the domain of Computational Psychiatry, concentrating on the processes of multisensory integration and bodily self-perception. I actively collaborate in the field of Human-Robot Interaction, focusing on the validation of emerging technologies for health and education.

RESEARCH EXPERIENCE

Pontifical Catholic University of Peru	
Head of Computational Cognitive Neuroscience Lab	Jan 2023 – Present
• I started the implementation of this new lab in the Department of Psychology, actively setting standards for workflow, equipment, human resources and software management.	
o I lead a team of 16 people among researchers, assistants, and students	
working on cognitive neuroscience projects using computational methods (More details: laboratorio-dptopsicologia.pucp.edu.pe).	
Principal Investigator (Department of Psychology)	Aug 2023 – Present
o Project: "Towards the development of a neurocomputational	0
profile of Peruvian women with symptoms of CPTSD"	
• Project: "Multisensory integration and auditory sensitivity in students	
Project: "Molodies of the mind: Desirbering the impact of music on the	
regulation of affective and cognitive states of university students	
using EEG and NLP"	
Co-researcher (Department of Engineering)	<i>Apr</i> 2021 – <i>Apr</i> 2023
o Project: "Teleoperated Mobile Robot for Mental Health	
Delivery in Patients with Infectious Diseases"	
Research Assistant (Department of Psychology)	Mar 2016 – May 2018
o Project: "Neurocognitive study of perception of actions and emotions	Ũ
in the interaction between human beings and humanoid robots"	
Junior Researcher (DGI)	Set 2015 – May 2016
o Project: "Implementation of a non-invasive EEG System	
for the study of Human Mirror Neurons".	
The University of Edinburgh	
Remote Research Assistant (Commutational Psychiatry Lah)	Sen 2019 – Aug 2021
o I started the collaboration with two laboratories of world-class	00p 2010 1112 2021
universities (NYU & University of Chieti-Pescara).	
o I led the process of writing and publishing two articles on	
neural networks in high impact journals.	
University of Waseda	
Data Analysis Consultant (School of International Liberal Studies)	Mau – Sen 2018
o I implemented Generalized Linear Models for data analysis	1.1y 00p 2010
in Human-Robot Interaction (HRI) studies.	
o I co-authored papers in relevant HRI journals and conferences.	

TEACHING EXPERIENCE

Pontifical Catholic University of Peru	
Full-time Lecturer (Department of Psychology)	Aug 2022 – Present
Undergraduate	
o Behavioural Neuroscience	
o Neuropsychology	
o Introduction to Python for Psychological Research	
o Non experimental research methods and Statistics	
Postgraduate	
o Statistics and Mathematical Psychology	
o Research Methods for Psychology	
Adjunct Lecturer (Department of Psychology)	Jan 2021 – July 2022
Teaching Assistant (Department of Psychology)	Mar 2017 – Sep 2018
o Research Methods and Statistics I	
Continuing Education Teacher (CETAM)	Jan – Apr 2018
o Research Methods for Human-Machine Interaction	
Neuromatch Academy Inc.	
Teaching Assistant	Jun 2020 – Jul 2022
o Support students in learning the theory and techniques of	, ,
deep learning with an emphasis on neuroscience.	
o Support students in learning computational neuroscience and	

- analytical modelling of brain activity.
- o Review of didactic material for theoretical and practical learning sessions.

EDUCATION

National University of Cordoba

PhD candidate in Neuroscience	Jun 2021 - Present
Supervisors: Dr. Peggy Series and Dr.Pablo Barttfeld	
Topic: "Neural Network modelling of multisensory integration	
in patients with schizophrenia and autism spectrum disorder"	
The University of Edinburgh	Edinburgh, UK
MSc. in Cognitive Science, with Distinction and Dissertation Prize	Sep 2018 - Aug 2019
Supervisor: Dr. Peggy Series	
Topic: "Computational modelling of peripersonal space	
representation in schizophrenia spectrum disorders"	
Pontifical Catholic University of Peru	Lima, Peru

B.A. in Educational Psychology, with Outstanding Mention

AWARDS

- o Winner of the Annual Research Project Grant (CAP PUCP 2023-2024).
- o Winner of the Research Support Grant (FAI PUCP 2023).
- o Cognitive Science Msc Dissertation Prize (The University of Edinburgh)
- First position of the Excellence Scholarship "President of the Republic" 2018 granted by PRONABEC (MINEDU).
- o Best paper award in the category "Excellence in Engineering Education" at IEEE Global Engineering Education Conference (EDUCON 2017).
- o Thesis approved unanimously with outstanding mention during undergraduate studies.
- o Winner of the Programme to Support Initiation in Research (PAIN PUCP 2015).
- Scholarship holder of the student mobility program of the Interuniversity Development Centre (CINDA 2013).

Cordoba, Argentina

Mar 2010 - Jul 2016

PARTICIPATION IN EVENTS

- o Oral presentation at Adriatica Summer School 2024.
- o Oral presentation at the ALADAA International Conference 2023.
- o Poster presentation at Bernstein Conference 2021.
- o Reviewer at international conferences on Human-Robot Interaction: ICSR (2020) and RO-MAN (2017-2024).
- Programme Committee and paper presentation at the International Workshop on Evaluation Methods Standardisation for Human-Robot Interaction (EMSHRI 2017).

INFORMATICS SKILLS

- o Programming Languages: Python, R, SQL, Java
- o Scientific software development: Python scientific stack, Pytest, Tox
- o Technical documentation: LaTex, Overleaf, Markdown, Sphinx
- o Database management: MySQL, Hive, Impala
- o Development environments: Linux, RStudio, Visual Studio Code, Google Colab, Git

PUBLICATIONS

Journal Articles

- Pérez-Zuñiga, G., Arce, D., Gibaja, S., Alvites, M., Cano, C., Bustamante, M., Horna, I., Paredes, R., & Cuellar, F. (2024). Qhali: A Humanoid Robot for Assisting in Mental Health Treatment. *Sensors*, 24(4), 1321.
- Gomez-Quispe, J. M., Pérez-Zuñiga, G., Arce, D., Urbina, F., Gibaja, S., **Paredes**, R., & Cuellar, F. (2023). Non Linear Control System for Humanoid Robot to Perform Body Language Movements. *Sensors*, 23(1), 552.
- Paredes, R., Ferri, F., & Seriès, P. (2022). Influence of E/I balance and pruning in peri-personal space differences in schizophrenia: a computational approach. *Schizophrenia Research*, 248, 368–377. https://doi.org/10.1016/j.schres.2021.06.026
- Noel, J.-P., Paredes, R., Terrebonne, E., Feldman, J. I., Woynaroski, T., Cascio, C. J., Seriès, P., & Wallace, M. T. (2022). Inflexible updating of the self-other divide during a social context in autism: psychophysical, electrophysiological, and neural network modeling evidence. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 7(8), 756–764. https://doi.org/ 10.1016/j.bpsc.2021.03.013
- Marius't Hart, B., Achakulvisut, T., Adeyemi, A., Akrami, A., Alicea, B., Alonso-Andres, A., Alzate-Correa, D., Ash, A., Ballesteros, J. J., Balwani, A., et al. (2022). Neuromatch Academy: a 3-week, online summer school in computational neuroscience. *Journal of Open Source Education*, 5(49), 118.
- Trovato, G., De Saint Chamas, L., Nishimura, M., Paredes, R., Lucho, C., Huerta-Mercado, A., & Cuellar, F. (2021). Religion and Robots: Towards the Synthesis of Two Extremes. *International Journal of Social Robotics*, 13, 539–556. https://doi.org/10.1007/s12369-019-00553-8
- Trovato, G., Lopez, A., Paredes, R., Quiroz, D., & Cuellar, F. (2019). Design and Development of a Security and Guidance Robot for Employment in a Mall. *International Journal of Humanoid Robotics*, 16(5). https://doi.org/10.1142/S0219843619500270
- Trovato, G., Lucho, C., & **Paredes**, R. (2018a). She's Electric—The Influence of Body Proportions on Perceived Gender of Robots across Cultures. *Robotics*, 7(3). https://doi.org/10.3390/ robotics7030050

Conference Papers

- Paredes, R., Cabral, J., & Seriès, P. Scikit-NeuroMSI: a Python framework for multisensory integration modelling. In: *IX Congreso de Matemática Aplicada, Computacional e Industrial*. 9. 2023, 545–548.
- Arce, D., Gibaja, S., Urbina, F., Maura, C., Huanca, D., Paredes, R., Cuellar, F., & Pérez-Zuniga, G. Design and preliminary validation of social assistive humanoid robot with gesture expression features for mental health treatment of isolated patients in hospitals. In: *Social Robotics: 14th International Conference, ICSR 2022, Florence, Italy, December 13–16, 2022, Proceedings, Part II.* Springer. 2023, 518–528.
- Paredes, R., & Seriès, P. Influence of E/I balance in peri-personal space differences in schizophrenia and autism: a neural network approach. In: *Bernstein Conference* 2021. 2021. https://doi.org/10. 12751/nncn.bc2021.p028.
- Trovato, G., Paredes, R., Balvin, J., Cuellar, F., Thomsen, N. B., Bech, S., & Tan, Z.-H. The Sound or Silence: Investigating the Influence of Robot Noise on Proxemics. In: 2018 27th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). 2018, 713–718. https: //doi.org/10.1109/ROMAN.2018.8525795.
- Abarca, M., Saito, C., Cerna, J., Paredes, R., & Cuéllar, F. An interdisciplinary unmanned aerial vehicles course with practical applications. In: 2017 IEEE Global Engineering Education Conference (EDUCON). 2017, 255–261. https://doi.org/10.1109/EDUCON.2017.7942856.
- Lopez, A., Ccasane, B., Paredes, R., & Cuellar, F. Effects of using indirect language by a robot to change human attitudes. In: *Proceedings of the companion of the 2017 ACM/IEEE international conference on human-robot interaction*. 2017, 193–194. https://doi.org/10.1145/3029798.3038310.
- Paredes, R., Laurel, C., Cuellar, F., & Davila, A. Implementation of Synchronization Triggers in an open-source EEG system for Visual Evoked Potentials measurement. In: SAN2016 Meeting. 2016. https://doi.org/10.3389/conf.fnhum.2016.220.00007.
- Caceres, P. C., Venero, R. P., & Cordova, F. C. Tangible programming mechatronic interface for basic induction in programming. In: 2018 IEEE Global Engineering Education Conference (EDUCON). 2018, 183–190. https://doi.org/10.1109/EDUCON.2018.8363226.
- Trovato, G., Lopez, A., Paredes, R., & Cuellar, F. Security and guidance: Two roles for a humanoid robot in an interaction experiment. In: 2017 26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). 2017, 230–235. https://doi.org/10.1109/ROMAN.2017. 8172307.
- Lopez, A., Paredes, R., Quiroz, D., Trovato, G., & Cuellar, F. Robotman: A security robot for humanrobot interaction. In: 2017 18th International Conference on Advanced Robotics (ICAR). 2017, 7–12. https://doi.org/10.1109/ICAR.2017.8023489.

Book Chapters

Paredes Venero, R., & Davila, A. (2020). Experimental Research Methodology and Statistics Insights. In C. Jost, B. Le Pévédic, T. Belpaeme, C. Bethel, D. Chrysostomou, N. Crook, M. Grandgeorge, & N. Mirnig (Eds.), *Human-Robot Interaction: Evaluation Methods and Their Standardization* (pp. 333–353). Springer, Cham. https://doi.org/10.1007/978-3-030-42307-0_13