Francisco Martín López

Doctoral Candidate · Frankfurt Institute for Advanced Studies
lopez@fias.uni-frankfurt.de · fcomlop.github.io

Education

PhD. in Theoretical Neuroscience *Due September 2025*

Goethe University Frankfurt, Germany

- Thesis: Learning sensorimotor control hierarchies through abstraction
- Advisor: Prof. Dr. Jochen Triesch

MSc. in Cognitive Science *2021*

Universidad de la República, Uruguay

- Thesis: A study on the spatial representation of numbers using context-dependent associative memories
- Advisor: Prof. Dr. Andrés Pomi
- Obtained with distinction by the committee

BSc. in Physics *2016*

Universidad de la República, Uruguay

- Thesis: Seismic wave propagation in granular materials: an application to agglomerated asteroids
- Advisors: Prof. Dr. Thomas Gallot and Prof. Dr. Gonzalo Tancredi

Professional experience

2021 - Now	**PhD Student**, Frankfurt Institute for Advanced Studies, Germany
2020 - 2021	**Research Assistant**, Interdisciplinary Center for Cognition and Education (CICEA), Uruguay
2017 - 2020	**Data Analyst**, Sigmaplus Engineering Company, Uruguay
2014 - 2017	**Research and Teaching Assistant**, Physics Institute, Faculty of Science, Universidad de la República, Uruguay

Selected peer-reviewed publications

López, F. M., Lenz, M., Fedozzi, M., Aubret, A., & Triesch, J. (Submitted). MIMo grows! Simulating body and sensory development in a multimodal infant model. In *2025 IEEE International Conference on Development and Learning (ICDL)*.

López, F. M., & Triesch, J. (2025). Hierarchical Residuals Exploit Brain-Inspired Compositionality. In *2025 European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN)*.

Faßbender, L., Falck, J., **López, F. M.**, Shing, Y. L., Triesch, J., & Schwarzer, G. (2025). A comparison of force adaptation in toddlers and adults during a drawer opening task. *Scientific Reports*, 15(1), 3699.

López, F. M., Shi, B. E., & Triesch, J. (2024) Prioritizing Compression Explains Human Perceptual Preferences. In *Intrinsically-Motivated and Open-Ended Learning Workshop @ NeurIPS2024*.

López, F. M., Raabe, M. C., Shi, B. E., Triesch, J. (2024). Self-Calibrating Saccade-Vergence Interactions. In *2024 IEEE International Conference on Development and Learning (ICDL)* (pp. 1-7). IEEE.

López, F. M., & Pomi, A. (2024). Inhibitory dynamics in dual-route evidence accumulation account for response time distributions from conflict tasks. *Cognitive Neurodynamics*, 18(4), 1507-1524.

Mattern, D., Schumacher, P., **López, F. M.**, Raabe, M. C., Ernst, M. R., Aubret, A., & Triesch, J. (2024). MIMo: A Multimodal Infant Model for Studying Cognitive Development. *IEEE Transactions on Cognitive and Developmental Systems*, 16(4),

1291-1301.

López, F. M., Shi, B. E., & Triesch, J. (2023). Eye-hand coordination develops from active multimodal compression. In *2023 IEEE International Conference on Development and Learning (ICDL)* (pp. 437-442). IEEE.

López, F. M., & Pomi, A. (2022). A neurocomputational model for the processing of conflicting information in context-dependent decision tasks. *Journal of Biological Physics*, 48(2), 195-213.

López, F. M., de León, D., Díaz-Simón, N., & Maiche, A. (2022). Development of Mathematical Cognition: The Role of Technology in Low-SES Populations. In *Cognitive Sciences and Education in Non-WEIRD Populations: A Latin American Perspective* (pp. 169-184). Springer International Publishing.

Selected invited activities

2025 **Invited reviewer**, *2025 IEEE International Conference on Development and Learning (ICDL)*

2025 **Invited organizer**, "BabyBench" Competition for Developmental Artificial Intelligence at *2025 IEEE International Conference on Development and Learning (ICDL)*, Czechia

2025 **Invited speaker**, Talk "Leveraging touch-based exploration in a multimodal infant model" in workshop "Gaining control of the hands for goal-directed action: Development and learning" at *2025 IEEE International Conference on Development and Learning (ICDL)*, Czechia

2023 **Invited research visit**, Research group of Bertram E. Shi at the Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology

Selected conference organization

2025 **Co-organizer**, Workshop "Development of Embodied Cognition (DECO)" at *2025 IEEE International Conference on Development and Learning (ICDL)*, Czechia

2021 **Co-organizer**, Interdisciplinary Graduate Student Conference on Cognitive Science (JICC), Uruguay

2017 **Assistant**, Asteroids, Comets and Meteors (ACM), Uruguay

Honors and grants

2025 **Young Fellow Finalist**, Scientific Society at the Goethe University Frankfurt, Germany

2021 **Graduate Research Funding**, The Adaptive Mind cluster project, Germany

2020 **Graduate Research Scholarship**, National Research and Innovation Agency (ANII), Uruguay

2015 **Travel Grant**, Southern Workshop on Granular Materials, Chile

2011 **Bourse d'Excellence-Major**, Agence pour l'Enseignement Français à l'Étranger, France

Academic references

Prof. Dr. Jochen Triesch Frankfurt Institute for Advanced Studies. Ruth-Moufang-Straße 1, 60438 Frankfurt am Main, Germany. Email: triesch@fias.uni-frankfurt.de

Prof. Dr. Bertram E. Shi Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology. Rm 2457, 2/F, Clear Water Bay, Hong Kong. Email: eebert@ust.hk

Prof. Dr. Andrés Pomi Cognitive Modeling Group, Faculty of Science, Universidad de la República. Iguá 4225, 11400 Montevideo, Uruguay. Email: pomi@fcien.edu.uy