Ábel Ságodi

PhD Student in Neuroscience
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RESEARCH EXPERIENCE

PhD Student 2021–Present
Champalimaud Centre for the Unknown, Lisbon, Portugal
Advisor: Prof. Memming Park

Research Intern Jun–Aug 2025
Flatiron Institute, New York, USA
Advisor: Prof. Mitya Chklovskii

Research Assistant Sep 2020– Feb 2021
Kavli Institute for Systems Neuroscience, Trondheim, Norway
Advisor: Prof. Yasser Roudi

EDUCATION

MSc in Mathematics, Track Mathematical Physics 2017–2020
University of Amsterdam, The Netherlands
Thesis: Conley Index Theory in Neuroscience (with Kathryn Hess at EPFL)

MSc in Computational Science 2017–2019
University of Amsterdam, The Netherlands
Thesis: Categorizing Attractor Dynamics in Neural Data

Double BSc in Mathematics and Physics 2014–2017
University of Amsterdam, The Netherlands
Thesis: The Qutrit in the Fibonacci Anyon Model

BSc in Neuroscience (Honours) 2012–2015
University of Amsterdam, The Netherlands
Thesis: Alternative Circuits and Interleaved Learning in the Hippocampus

PUBLICATIONS

1. **Ságodi, Á.** & Park, I. M. (2026). *Universal Approximation Theorems for Dynamical Systems with Infinite-Time Horizon Guarantees*. arXiv:2602.08640.
2. Liang, A., **Ságodi, Á.**, Sokół, P. A., & Park, I. M. (2025). *Symmetry-Regularized Learning of Continuous Attractor Dynamics*. NeurIPS 2025 Workshop on Symmetry and Geometry in Neural Representations. openreview:W8Gf7CYCo8.
3. **Ságodi, Á.** & Park, I. M. (2025). *Dynamical Archetype Analysis: Autonomous Computation*. arXiv:2507.05505.
4. **Ságodi, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (2024). *Back to the Continuous Attractor*. Thirty-eighth Annual Conference on Neural Information Processing Systems. openreview:fvG6ZHrH0B.
5. Park, I. M., **Ságodi, Á.**, & Sokół, P. A. (2023). *Persistent Learning Signals and Working Memory without Continuous Attractors*. arXiv:2308.12585.

INVITED TALKS

1. **Ságodi, Á.** (28-10-2025). *Approximate Continuous Attractor Theory*. The Max Planck Institute for Neurobiology of Behavior-caesar, Bonn, Germany.

2. **Ságodi, Á.** (30-09-2025). *The neuron as a controller of stochastic dynamics*. Bernstein Workshop, Frankfurt, Germany.

CONTRIBUTED TALKS

1. **Ságodi, Á.** (07-24-2026). *From Trajectories to Dynamical Archetypes: Uncovering Interpretable Neural Dynamics*. Dynamics Days Europe, Minisymposium: Dynamics, Computations and Learning in Living Systems, Lisbon.
2. **Ságodi, Á.** (10-11-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Janelia Junior Scientist Workshop on Theoretical Neuroscience, USA.
3. **Ságodi, Á.** (10-09-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Analytical Connectionism Workshop, London, UK.

POSTERS

1. Liang, A. **Ságodi, Á.** & Park, I. M. (15-03-2026). *Symmetry-Regularized Learning of Continuous Attractor Dynamics*. COSYNE.
2. **Ságodi, Á.** & Park, I. M. (13-10-2026). *Dynamical Archetype Analysis: Autonomous Computation*. Champalimaud Research Symposium.
3. Chklovskii, D.B., Pughe-Sanford, Ding, X., & **Ságodi, Á.** (12-03-2026). *The neuron as a stochastic feedback controller*. COSYNE.
4. **Ságodi, Á.** & Park, I. M. (15-10-2025). *Dynamical Archetype Analysis: Autonomous Computation*. Champalimaud Research Symposium.
5. **Ságodi, Á.**, Pughe-Sanford, & Chklovskii, D.B. (06-08-2025). *The neuron as a stochastic feedback controller*. Flatiron Institute.
6. **Ságodi, Á.** & Park, I. M. (11-07-2025). *Dynamical Archetype Analysis: Autonomous Computation*. Junior Theoretical Neuroscientist Workshop (Flatiron).
7. **Ságodi, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (29-03-2025). *Approximate Continuous Attractor Theory*. COSYNE.
8. **Ságodi, Á.**, Martin-Sanchez, G., Sokół, P. A., & Park, I. M. (12-12-2024). *Back to the Continuous Attractor*. NeurIPS.
9. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (01-10-2024). *Slow Manifold Dynamics for Working Memory are near Continuous Attractors*. Bernstein Conference.
10. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (09-11-2024). *RNNs with Gracefully Degrading Continuous Attractors*. Janelia Junior Scientist Workshop on Theoretical Neuroscience.
11. **Ságodi, Á.**, Park, I. M., & Sokół, P. A. (11-09-2023). *RNNs with Gracefully Degrading Continuous Attractors*. Analytical Connectionism Summer School (Gatsby).
12. **Ságodi, Á.** (17-07-2021). *Conceptualizing explanations through category theory*. 4th International Conference on Applied Category Theory.

TEACHING EXPERIENCE

- **Teaching Assistant**, Time Series Analysis (INCDP) 2023
  Champalimaud Centre
- **Teaching Assistant**, Linear Dynamical Systems (INCDP) 2022
  Champalimaud Centre
- **Teaching Assistant**, Mathematics for Physicists 2 2017
  University of Amsterdam
- **Tutor**, Mathematics, Physics, Chemistry, Biology 2012–2015
  StudentsPlus, Netherlands

AWARDS

- **Presenters Travel Grant**, COSYNE (Awarded for top reviewer ranking) 2025
- **Amsterdam University Fund Scholarship** (for exchange to EPFL) 2019

- **Amsterdam University Fund Scholarship** (for exchange to NUS) 2016
- **First Prize**, *Explore the High-energy Universe* (European Space Agency) 2012

PEER REVIEWING

- **2025**: ICML (5), TMLR (4), NeurIPS (6, Top Reviewer)
- **2024**: ICML (6), AISTATS (2), NeurIPS (6, Top Reviewer)
- **2023**: ICML (3), ICLR (6), NeurIPS (7)

TECHNICAL SKILLS

Programming: Python, Matlab, Mathematica, R, C++, Bonsai.