

Eran Agmon, Ph.D.

Curriculum Vitae

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Summary of Qualifications

- Computational scientist, trained in complex systems, machine learning, and mathematical analysis.
- Experience modeling multiple scales of biological systems including molecular interactions, metabolic networks, whole cells, neural systems, and the interactions of whole organisms with their environments.
- Interdisciplinary background, with collaborations in both theoretical and experimental labs.

Education

- 2011–2016 **Joint Ph.D., Informatics and Computing, and Cognitive Science,**
Indiana University, Bloomington, IN.
Dissertation: The Foundation of Agency: An Exploration of How Minimal Organisms Emerge From and Adapt To Their Environments
Committee: Randall D. Beer (chair), Colin Allen, Peter M. Todd, James A. Glazier
- 2009–2011 **M.Sc., Systems Science,**
Portland State University, Portland, OR.
Thesis: A Computational Model of Adaptive Sensory Processing in the Electrosensation of Mormyrid Electric Fish
- 2004–2009 **B.S., Cognitive Science,**
University of California San Diego, San Diego, CA.
Concentration: Neuroscience, Minor: Biology

Experience

- 2016–2017 **Postdoctoral Research Fellow,** *Department of Biological Sciences, Columbia University, New York City, NY*
Advisor: Brent R. Stockwell.
- 2016–2017 **Visiting Scholar,** *Program in Interdisciplinary Studies, Institute for Advanced Study, Princeton, NJ.*
- 2017 **Visitor,** *Earth-Life Science Institute Origins Network, Tokyo Institute of Technology, Tokyo, Japan.*

Teaching

- 2014, 2016 **Associate Instructor,** *Indiana University, Bloomington, IN.*
Course: Autonomous Robotics
- 2013 **Associate Instructor,** *Indiana University, Bloomington, IN.*
Course: Brains & Minds, Robots & Computers

Publications

12. Agmon, E. and Stockwell, B.R. (submitted). Modeling the effects of lipid peroxidation during ferroptosis on membrane properties.
11. Virgo, N., Agmon, E., and Fernando, C. (2017). Lineage selection leads to evolvability at large population sizes. *Proceedings of the Fourteenth European Conference on Artificial Life*, (pp. 420-427). MIT Press.

10. Agmon, E., Glazier, J.A, and Beer, R.D. (2017). Structural Coupling of a Potts Model Cell. *Proceedings of the 14th European Conference on Artificial Life 2017*, (pp. 13-20). MIT Press.
9. Agmon, E. and Stockwell, B.R. (2017). Lipid homeostasis and regulated cell death. *Current Opinion in Chemical Biology*. 39: 83-89.
7. Agmon, E., Gates, A.J., and Beer, R.D. (2016). The structure of ontogenies in a model protocell. *Artificial Life* 22 (4): 499-517.
6. Taylor, T., Bedau, M. A., Channon, A., et al. (2016). Open-Ended Evolution: Perspectives from the OEE1 Workshop in York. *Artificial Life* 22 (3): 408-423.
5. Agmon, E., Gates, A.J., Churavy, V. and Beer, R.D. (2016). Exploring the space of viable configurations in a model of metabolism-boundary co-construction. *Artificial Life*, 22 (2): 153-171.
4. Agmon, E., Gates, A.J., and Beer, R.D. (2015). Ontogeny and adaptivity in a model protocell. In P. Andrews, L. Caves, R. Doursat, S. Hickinbotham, F. Polack, S. Stepney, T. Taylor & J. Timmis (Eds.), *Proceedings of the European Conference on Artificial Life 2015* (pp. 216-223). MIT Press. **[Winner of Best Paper Award]**
3. Agmon, E., Gates, A.J., Churavy, V. and Beer, R.D. (2014). Quantifying robustness in a spatial model of metabolism-boundary co-construction. In H. Sayama, J. Rieffel, S. Risi, R. Doursat & H. Lipson (Eds.), *Artificial Life 14: Proceedings of The Fourteenth International Conference on the Synthesis and Simulation of Living Systems* (pp. 514-521). MIT Press.
2. Agmon, E., & Beer, R. D. (2014). The evolution and analysis of action switching in embodied agents. *Adaptive Behavior*, 22(1), 3-20.
1. Agmon, E. (2014). Action Switching in Brain-Body-Environment Systems. In *Guided Self-Organization: Inception* (pp. 295-318). Springer Berlin Heidelberg.

Honors and Awards

- 2017 Outstanding Dissertation Award, Indiana University Cognitive Science
- 2015 Best paper award, European Conference on Artificial Life
- 2015 1st place poster, IGERT Research Showcase
- 2014-2015 NSF IGERT Fellowship in the Dynamics of Brain-Body-Environment Systems
- 2014 Outstanding Teaching Award, Indiana University Cognitive Science
- 2014 1st place poster, IGERT Research Showcase
- 2014 Cognitive Science Supplemental Research Fellowship
- 2013 2nd place poster, IGERT Research Showcase
- 2011-2015 NSF IGERT Fellowship in the Dynamics of Brain-Body-Environment Systems

Selected Recent Presentations

- Sep. 2017 **“Structural Coupling of a Potts Model Cell,”** *14th European Conference on Artificial Life*, Lyon, France.
- Mar. 2017 **“Computational Models of Heterogeneous Lipid Membranes,”** *Frontiers in Computing Systems*, Columbia University, NY.
- Jan. 2017 **“The Structure of Ontogenies in a Model Protocell,”** *Expanding Views on the Emergence of the Biosphere*, Tokyo Institute of Technology, Tokyo, Japan.

Feb. 2016 **“Whole Cell Models and Perturbation-Based Analysis,”** *Stockwell Lab*, Columbia University, NY.

Workshops & Meetings

- September 2017 Agency in the Physical Sciences. European Conference on Artificial Life 17. Lyon, France.
- March 2017 Frontiers in Computing Systems. Columbia University, NY.
- February 2017 p53 P01 Multi-Group meeting. Columbia University, NY.
- January 2017 Expanding Views on the Emergence of the Biosphere: 5th ELSI International Symposium. Tokyo Institute of Technology, Tokyo, Japan.
- July 2016 Workshop on the Biological Foundations of Enactivism, at Artificial Life 16. Cancun, Mexico.
- Fall 2015 & Winter 2016 The Program in Interdisciplinary Studies. Institute for Advanced Study, Princeton, NJ.
- November 9-13, 2015 Re-conceptualizing the Origins of Life. Carnegie Institution for Science, Washington D.C.
- October 2015 Self-organization in brain-body-environment systems: selective openness to affordances. University of Cincinnati, OH.
- August 2015 Summer school on "Towards an Integrative Approach to the Study of Awareness." Kobe, Japan.
- December 2014 The Causal Factors of Robustness and Plasticity in Living Systems. Indiana University, Bloomington, IN.
- July 2013 Adaptivity workshop. University of the Basque Country, San Sebastian, Spain.
- June 2010 New England Complex Systems Institute Summer School. Massachusetts Institute of Technology, Cambridge, MA.

Service and Societies

- Associate Editor Journal of Adaptive Behavior.
- Member International Society for the Study of the Origin of Life.
- Member The International Society for Artificial Life.
- Program Committee European Conference on Artificial Life. 2016, 2017.
- Program Committee Conference on Complex Systems, 2017.
- Organizer Workshop on Agency in the Physical Sciences, at the European Conference on Artificial Life 17. September 2017.
- Organizer The Biological Foundations of Enactivism, at Artificial Life 16. July 2016.
- Program Committee Artificial Life 15: The Fifteenth International Conference on the Synthesis and Simulation of Living Systems, 2016.
- Reviewer Artificial Life Journal, 2015-present.
- Organizer E-cog: weekly meeting on Embodied, Embedded, and Enactive approaches in Cognitive Science. 2013-2015.
- Organizer Causal Factors of Robustness and Plasticity in Living Systems. 2014.
- Organizer Apophenia: weekly discussions of Complex Systems and Cognitive Science. 2012-2013.