

Noah Olsman

Curriculum Vitae

Education

- 2008 – 2012 **B.S. Electrical Engineering**, *University of Southern California*, GPA: 3.8.
Graduated *Magna Cum Laude*, with a minor in mathematics
- 2013 – 2018 **Ph.D. Control & Dynamical Systems**, *California Institute of Technology*, GPA: 3.8.
Co-advised by Lea Goentoro and John Doyle, thesis title: *Architecture, Design, and Tradeoffs in Biomolecular Feedback Systems*

Employment

- 2019 – present **Postdoctoral Fellow**, *Harvard Medical School*.
I am currently a postdoctoral fellow in the Department of Systems Biology at Harvard Medical School working in the lab of Johan Paulsson. I am currently focused on developing an experimental framework for studying performance tradeoffs in biomolecular feedback systems.
- June 2019 **Instructor**, *Math Academy*.
I taught a Summer course in coding and information theory for a group of highly gifted middle schoolers in the Pasadena Unified School District. The course focused on familiarizing them with the concepts of probability and information, as well as giving them context for how this area of mathematics has impacted the world over the past century.
- 2014 – 2018 **Chief Analytics Officer**, *Seed Consulting Group*.
I served as the Chief Analytics Officer for Seed Consulting Group, a nonprofit environmental consultancy. I was a part of the leadership team that is involved in fund-raising, management, and planning for the organization (now consisting of 100+ consultants across California). My role focused on leading Seed's efforts towards environmental education, outreach, and journalism.
- June 2016 **Summer Research Intern**, *Argonne National Labs*.
I worked on the Array of Things project, focused on creating an urban sensing platform in the city of Chicago. My project focused on implementing real-time, machine learning-based computer vision algorithms for applications like pedestrian and traffic detection.
- 2012 – 2013 **Post-Baccalaureate Researcher**, *Yale University*.
I worked in the Department of Molecular, Cellular, and Developmental Biology doing mathematical modeling of bacterial chemotaxis in the lab of Professor Thierry Emonet.
- June 2010 **Research Experience for Undergraduates**, *Harvard University*.
I worked on the RoboBees project in the lab of Professor Radhika Nagpal in the Department of Computer Science. The goal of this project was to develop robotic bees at a natural scale that are capable of autonomous flight and decision-making. I developed distributed algorithms to control and distribute these robots in real-world tasks, such as pollination.

Research Interests

- Mathematics: Control Theory, Dynamical Systems, Social Learning
Biology: Systems and Synthetic Biology, Decision Making, Cell Signaling
Computing: Bioinformatics, Statistical Inference, Learning Systems

Publications

- [1] Bader Al-Anzi, Patrick Arpp, Sherif Gerges, Christopher Ormerod, **Noah Olsman**, and Kai Zinn. Experimental and computational analysis of a large protein network that controls fat storage reveals the design principles of a signaling network. *PLoS computational biology*, 11(5):e1004264, 2015.
- [2] Bader Al-Anzi, Sherif Gerges, **Noah Olsman***, Christopher Ormerod, Georgios Piliouras, John Ormerod, and Kai Zinn. Modeling and analysis of modular structure in diverse biological networks. *Journal of Theoretical Biology*, 422:18–30, 2017.
- [3] Elchanan Mossel, **Noah Olsman***, and Omer Tamuz. Efficient bayesian learning in social networks with gaussian estimators. In *Communication, Control, and Computing (Allerton), 2016 54th Annual Allerton Conference on*, pages 425–432. IEEE, 2016.
- [4] **Noah Olsman***, Carmen Amo Alonso, and John C Doyle. Architecture and trade-offs in the heat shock response system. In *2018 IEEE Conference on Decision and Control (CDC)*, pages 1096–1103. IEEE, 2018.
- [5] **Noah Olsman***, Ania-Ariadna Baetica, Fangzhou Xiao, Yoke Peng Leong, Richard M Murray, and John C Doyle. Hard limits and performance tradeoffs in a class of antithetic integral feedback networks. *Cell systems*, 2019.
- [6] **Noah Olsman*** and Lea Goentoro. Allosteric proteins as logarithmic sensors. *Proceedings of the National Academy of Sciences*, page 201601791, 2016.
- [7] **Noah Olsman***, Fangzhou Xiao, and John Doyle. Evaluation of hansen et al.: Nuance is crucial in comparisons of noise. *Cell Systems*, 7(4):352–355, 2018.
- [8] **Noah Olsman***, Fangzhou Xiao, and John C Doyle. Architectural principles for characterizing the performance of antithetic integral feedback networks. *iScience*, 14:277–291, 2019.
- [9] **Noah Olsman*** Andrew. *Architecture, Design, and Tradeoffs in Biomolecular Feedback Systems*. PhD thesis, California Institute of Technology, 2019.

* indicates primary authorship, † indicates preprints

Conference Presentations

- 2015 **Molecular Origins of Logarithmic Sensing In Biological Networks**, *3rd Annual Winter Quantitative Biology Meeting*.
- 2016 **Efficient Bayesian Learning in Social Networks with Gaussian Estimators**, *54th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*.
- 2018 **Hard Limits and Performance Tradeoffs in Biomolecular Feedback Systems**, *6th Annual Winter Quantitative Biology Meeting*.