Clayton Seitz

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OBJECTIVE

To develop a mathematical description of memory formation and retrieval in complex networks; in particular, networks of neurons. I am also interested in the storage limits of such systems, their ability to compress incoming signals, and optimization problems that can be solved by dynamical processes on these networks.

EDUCATION

Master of Science, Biophysics
University of Chicago, Chicago, IL, Expected 2021
Thesis: *Stochastic Computation in Recurrent Networks of Spiking Neurons*

Bachelor of Science, Physics
Purdue University, Indianapolis, IN, 2019
Minor: Mathematics

Bachelor of Science, Informatics
Luddy School of Informatics, Computing, and Engineering, Indiana University Bloomington, 2019
Concentration: Mathematics

SUPP. EDUCATION

Graduate Coursework,
Algorithms, Computer Architecture, Princeton University
Foundations, Modular Programming, Memory Management, Pointers, Advanced Data Types

COMPUTER SKILLS

Languages & Software: Python, Tensorflow, C/C++, MySQL, MATLAB, Git, LaTeX, Bash

EXPERIENCE

Research Software Developer 2019-2021
Indiana University, Indianapolis, IN

- Develop an image processing software pipeline for high-throughput quantification of images in fluorescent microscopy
- Utilize high performance computing clusters for image segmentation, single particle tracking, and image registration

Undergraduate Researcher 2019-2020

- Utilize time-correlated single photon counting (TCSPC) to characterize the sub-Poissonian emission of organic quantum dots dispersed in a thin film of poly-methyl methacrylate (PMMA)
- Design and utilize a 3-color imaging protocol to perform single-molecule imaging of mRNA transcripts in human epithelial kidney and osteosarcoma cells

Undergraduate Tutor 2018-2019

- Tutored undergraduate students in introductory physics courses covering classical mechanics, classical electromagnetism, circuit analysis, and modern physics

Information Security Intern 2018-2019
Liberty Mutual Insurance
- Performed attestation testing on externally facing servers

AWARDS

PS-ON Annual Investigator Meeting Travel Award 2019
Purdue University, Indianapolis, IN

Hudson and Holland Scholarship for Diversity and Inclusion 2013-2017
Indiana University, Bloomington, IN

Founders Scholar 2013-2017
Indiana University, Bloomington, IN

Cigital Scholarship 2016-2017
Indiana University, Bloomington, IN

Dean's List 2013-2019
Indiana University, Bloomington, IN

PUBLICATIONS

Seitz C., Lin H., and Liu, J. (2019). *Intranucleus Single Molecule Tracking.* Unpublished Manuscript, Department of Physics, IUPUI, Indianapolis, IN, United States

Seitz C., Reeser A., Li F., and Liu, J. (2019). *Machine Learning Methods in Image-Based Transcriptomics at Single Molecule Resolution*, poster, IUPUI Undergraduate Research Symposium, Indianapolis, IN, United States.