Clayton Seitz

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SUMMARY

Aspiring machine learning engineer in pharma or biotech. As a physicist, I am entering into this space having relevant background in Bayesian statistics, optimization, variational inference, information theory, and stochastic processes. I am also quite familiar with deep learning and modern deep learning frameworks. During my academic training, I have brought mathematical and statistical knowledge, learned in physics and computer science, to biology. In brief, I have used the above frameworks to study two examples of memory formation in biologicla sytems (i) cytokine-induced transcriptional memory in mammalian cells and (ii) inference methods for determining the structure and plasticity of neural microcircuits. I also have experience building specialized fluorescence microscopes for high-throughput imaging, which has led to a general interest in high-content screens of the tumor microenvironment during cancer immunotherapy. In the future, I envision that I will work as a project lead for a machine learning group focusing on drug discovery.

EDUCATION

Doctor of Philosopy, Physics
Purdue University, West Lafeyette, IN, 2024
Thesis: *Untitled*

Master of Science, Biophysics
University of Chicago, Chicago, IL, 2021
Thesis: *Stable cell assembly formation in excitatory-inhibitory neuronal networks*

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

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

COMPUTER SKILLS

Languages & Software: Python, R, PyTorch, C, Git, LaTeX, Bash, Linux

EXPERIENCE

Research Technician 2019-2021
Indiana University - Purdue University, Indianapolis, IN

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

Undergraduate Researcher 2019-2020
Indiana University - Purdue University, Indianapolis, IN

- 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
Indiana University - Purdue University, Indianapolis, IN
- Tutored undergraduate students in introductory physics courses covering classical mechanics, classical electromagnetism, circuit analysis, and modern physics

AWARDS

NIH Graduate Training Fellowship 2020
University of Chicago, Chicago, IL

Travel Award and Lightning Talk Invitation 2019
Physical Sciences in Oncology - Minneapolis, MN

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

PUBLICATIONS

Maelle Locatelli[†], Josh Lawrimore[†], Hua Lin[†], Sarvath Sanaullah, Clayton Seitz, Dave Segall, Paul Kefer, Salvador Moreno Naike, Benton Lietz, Rebecca Anderson, Julia Holmes, Chongli Yuan, George Holzwarth, Bloom Kerry, Jing Liu, Keith D Bonin, Pierre-Alexandre Vidi. *DNA damage reduces heterogeneity and coherence of chromatin motions.* PNAS. 2022

Mengdi Zhang, Clayton Seitz, Garrick Chang, Fadil Iqbal, Hua Lin, and Jing Liu *A guide for single-particle chromatin tracking in live cell nuclei.* Cell Biology International. January 2022.

Wenting Wu, Farooq Syed, Edward Simpson, Chih-Chun Lee, Jing Liu, Garrick Chang, Chuanpeng Dong, Clayton Seitz, Decio L. Eizirik, Raghavendra G. Mirmira, Yunlong Liu, Carmella Evans-Molina; *Impact of Proinflammatory Cytokines on Alternative Splicing Patterns in Human Islets.* Diabetes 1 January 2022; 71 (1): 116–127