

Clayton W. Seitz, Ph.D.

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PERSONAL STATEMENT	I have experience in the design, development, and application of algorithms for processing raw sensor data and efficient 2D/3D tracking. In addition, I have extensive experience with Python/C/C++, Tensorflow, and real-time sensor data	
EDUCATION	Doctor of Philosophy, Physics	2024
	Purdue University	
	Master of Science, Physics	2021
	University of Chicago	
EDUCATION	Bachelor of Science, Physics, Magna Cum Laude	2019
	Indiana University	
	Minor: Mathematics	
	Bachelor of Science, Informatics (Math Focus), Magna Cum Laude	2019
	Indiana University	
EXPERIENCE	Graduate Researcher	2021-2024
	Purdue University, Indianapolis, IN	
	<ul style="list-style-type: none">• Developed hardware and software systems for precise 2D/3D particle tracking applications in statistical physics• Modeled stochastic behaviors of physical systems and sensors for precision measurements• Used physical principles and signal processing concepts for algorithm/model development• Applied machine learning models for computer vision and general data analysis• Developed optimization algorithms for localization of objects in microscopy datasets	
	Graduate Researcher	2020-2021
EXPERIENCE	University of Chicago, Chicago, IL	
	<ul style="list-style-type: none">• Investigated fundamental learning mechanisms in recurrent neural networks (RNNs) using dynamical models, mean-field theory, and time-series analysis.• Designed and ran Monte Carlo simulations of spiking neural networks	
	Research Assistant	2018-2020
	Purdue University, Indianapolis, IN	
EXPERIENCE	<ul style="list-style-type: none">• Developed a scientific package in Python for high-throughput object detection and tracking• Managed the package lifecycle and user training throughout the laboratory	

AWARDS	NIH Graduate Training Fellowship University of Chicago, Chicago, IL	2020
	Travel Award and Lightning Talk Invitation Physical Sciences in Oncology - Minneapolis, MN	2019
	Hudson and Holland Scholarship for Diversity and Inclusion Indiana University, Bloomington, IN	2013-2017
	Founders Scholar Indiana University, Bloomington, IN	2013-2017
	Cigital Scholarship Indiana University, Bloomington, IN	2016-2017
PUBLICATIONS	Clayton Seitz [†] , Donghong Fu [†] , Mengyuan Liu, Hailan Ma, and Jing Liu. <i>BRD4 phosphorylation regulates the structure of chromatin nanodomains</i> . Physical Review Letters (In Review). https://doi.org/10.1101/2024.09.03.611057 . 2024	
	Clayton Seitz and Jing Liu. <i>Uncertainty-aware localization microscopy by variational diffusion</i> . In Review. 2024	
	Clayton Seitz and Jing Liu. <i>Quantum enhanced localization microscopy with a single photon avalanche diode array</i> . In Review. 2024	
	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. <i>DNA damage reduces heterogeneity and coherence of chromatin motions</i> . PNAS 12 July 2022; 119 (29): 1-11	
	Mengdi Zhang, Clayton Seitz, Garrick Chang, Fadil Iqbal, Hua Lin, and Jing Liu. <i>A guide for single-particle chromatin tracking in live cell nuclei</i> . Cell Biology International 15 January 2022; 46 (5): 683-700	
	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; <i>Impact of Proinflammatory Cytokines on Alternative Splicing Patterns in Human Islets</i> . Diabetes 25 October 2021; 71 (1): 116-127	
	Clayton Seitz, Hailan Ma, and Jing Liu. <i>Cytokine-induced transcriptional memory is evident in the kinetics of transcriptional bursts</i> . Biophysical Society Annual Conference 2022	
SOFTWARE SKILLS	Clayton Seitz, Hua Lin, Keith Bonin, Pierre-Alexandre Vidi, and Jing Liu. <i>Quantifying the spatiotemporal dynamics of dUTP labeled chromatin during the DNA damage response</i> . Biophysical Society Annual Conference 2020	
	Programming Languages & Software: Linux, Bash, Python, R, PyTorch, C/C++, SQL, LaTeX, Git, Docker, SLURM, AWS	