PETER THOMPSON

EDUCATION

University of Illinois - Champaign-Urbana, IL *August 2020 - Present*
Doctor of Philosophy
BioPhysics

Case Western Reserve University - Cleveland, OH *August 2017-August 2019*
Master of Science
Physics with Concentration in Entrepreneurship

Purdue Universiy - West Lafayette, IN *June 2013 - May 2017*
Bachelor of Science
Physics and Mathematics

PUBLICATIONS

1. **Thompson, P.** A scientific and economic analysis of the hyperloop as it pertains to mass transportation. Master's thesis, Case Western Reserve University, 2019

2. SULLIVAN, B., ROBISON, G., OSBORN, J., KAY, M., **Thompson, P.**, DAVIS, K., ZAKHAROVA, T., ANTIPOVA, O., AND PUSHKAR, Y. On the nature of the cu-rich aggregates in brain astrocytes. *Redox Biology 11* (2017), 231–239

CONFERENCE PRESENTATIONS

1. MAY, B., **Thompson, P**, YANNELL, M., LINDELL, R., AND REIFENBERGER, R. Smash: Modern physics, January 2016. American Association of Physics Teachers Spring National Conference, New Orleans, LA

RESEARCH EXPERIENCE

Ph.D. Research, University of Illinois Champaign-Urbana, IL
March 2021 - Present *Advised by Dr. Lisa Olshansky*

· The aim of this research group is to understand and mimic conformational changes that occur naturally in biological systems
· Protein engineering for increased efficiency in expression and purification
· Created and executed experiments to understand protein binding characterization
· Protein purification and crystallographic studies
· Computational design of reversible redox mediator biding; design of a co-enzyme redox relay embedded in the protein host
· Created a stochastic program leveraging the Gillespie algorithm to predict cell death by bacteriophage
· Leveraged Reinforcement Learning algorithm to navigate a continuous vector space and find the most likely outcome

Graduate Thesis, Case Western Reserve University Cleveland, Ohio
August 2018 - August 2019 *Advised by Edward Caner*

· Explored the technological and economic feasibility of the Hyperloop as proposed by Elon Musk
· Studied literature and physical models proposed for Hyperloop system via physical analysis of Musk's white paper
· Created economic analysis of high-speed transportation and applied to global cases of the Hyperloop

Undergraduate Research Assistance, Purdue University
West Lafayette, IN.

August 2015 - January 2017 — *Advised by Dr. Yulia Pushkar*

- The aim of the research group was to investigate the electron transfer process in photosystem II and the affect of heavy medals on mice brains after a mutation
- Stained mice brain slices to determine if stem cell growth was affected by a genetic mutation.
- Scanned brain samples with x-rays at Argonne National Laboratory to identify metal concentrations in mice brains
- Collected data of spinach samples at Argonne National Laboratory to study photosystem II in plants

Undergraduate Research Assistance, Purdue University
West Lafayette, IN.

May 2015 - August 2015 — *Advised by Dr. Ronald Reifenberger*

- The aim of this project was to create a smart phone application that would be used by students in a modern physics class to aid in their studying
- Collaborated in content creation for the phone application SMASH (Scientific Multiple-choice Assessment for Student Handhelds) Physics
- Transcribed the content into JSON so the questions could be translated by the phone application

EMPLOYMENT HISTORY

Software Engineer
GenomOncology, LLC

May 2018 - July 2020 — *Cleveland, OH.*

- Drove continuous integration and delivery of software through automation
- Orchestrated hundreds of client deployments
- Troubleshooting and root cause analysis
- Collaborated effectively with technical and non-technical co-workers and clients
- Cloud infrastructure setup, maintenance, networking and troubleshooting
- Observed HIPPA compliance and software security protocols
- Identified areas of inefficiency and automate processes leveraging opensource software
- Organized and created documentation for FDA approval process
- Created organizational documentation for client needs and software maintenance
- Managed and submitted SBIR grant proposal

BioInformatics Intern
GenomOncology, LLC

October 2017 - April 2018 — *Cleveland, OH.*

- Developed integration tests for API suite for quality assurance
- Identified and fixed bugs within software

TEACHING EXPERIENCE

MCB 253 - Experimental Techniques in Cellular Biology
August 2021 - December 2021

Graduate Teaching Assistant, University of Illinois

PHYS 172 - Modern Mechanics
January 2014 – May 2017

Undergraduate Teaching Assistant, Purdue University

RELEVANT COURSES

1. Core Courses
Deep Learning, Numerical Analysis, Intellectual Property Management, Quantum Mechanics, Stochastic Processes of Biological systems, Biophysics, Physical Biochemistry

LEADERSHIP

Purdue Science Student Council   Spring 2014 - May 2017
President   *November 2015 - November 2016*

· Collaborated with faculty and staff to facilitate events for the College of Science
· Orchestrated the College of Science New Student Orientation to assist freshmen with acclimation
· Moderated general meetings for the student council to plan and execute semester activities

SKILLS

Programming:
Python, bash, Git, Continuous integration, Automation, Cloud Architecture and maintenance
Tools:
Jenkins, Google Cloud Platform, PyCharm, VS Code, nginx, docker, Digital Ocean, AWS, Jira, BitBucket, Confluence
Operating Systems:
Linux, MacOS, Windows