Shayne Plourde

Columbus, OH | PhD (Expected Graduation Nov 2023) | shayne.plourde@outlook.com
https://www.linkedin.com/in/shayne-plourde/ | https://shayne-falco.github.io/

SUMMARY

Accomplished computational biologist with a decade of research in mathematics, data science, and biology. Strong ability and expertise to analyze large data sets and use the insights to make informative visualizations and models. Seeking a position that utilizes my biological and computational training to build and improve AI/ML projects and tools.

SKILLS

- **Biology/Laboratory**: Fluorescent Microscopy (Time Series, 3D imaging, FRAP), Experimental Design & Collection, Scientific Writing (Grants, Publications), RNAseq, Data Analysis
- **Programming**: Python (Pandas, Numpy, SciKit-Learn), Matlab (Parallel Computing, Statistics & Machine Learning), R, GitHub, XMGrace, LaTeX, Parameterization, OOP, Debugging

EDUCATION

The Ohio State University - Columbus, Ohio
Ph.D. - Molecular, Cellular, Developmental Biology [Expected Graduation: Fall 2023]
M.M.S - Mathematical Biosciences [2017]
The University of Maine - Orono, Maine
B.A. - Mathematics, minor: Computer Science, Magna Cum Laude with High Honors [2015]

EXPERIENCE

Laboratory Research Associate/Leader [2016 - present], Dawes Lab, the Ohio State University
- Leading independent and collaborative research, productive meetings, purchasing of lab supplies.
- Read and critically analyze literature to support writing/editing scientific publications and grants.
- Responsible for determining damages and replacing equipment totaling over $10,000.
- Mentored five students in microscopy protocols, modeling concepts, and data analysis pipelines.

Research Associate - Image Analysis for AI Model Training [2013 - 2016], CompuMAINE Laboratory
- Developed a quantified methodology to determine fractal dimension of tissues in mammograms potentially allowing earlier detection of the presence of cancer.

SELECTED PROJECTS

Quantification of Cellular Patterning Based on Ground Truths with Modeling & Microscopy [2018-present]
- Acquired and analyzed over 100 high-quality 4D microscopy images to parameterize the model.
- Developed a novel 3 compartment ODE model of centrosome maturation combining the dynamics of 3 biological hypotheses, giving them a novel combined mathematical understanding.

Identified Two Novel Pollen Patterning Mutants *in silico* [2016-2019]
- Improved modeling and biological experiments by developing a Turing model to predict the behavior of novel *Arabidopsis thaliana* pollen mutants.
- Received competitive funding award to sponsor research totaling over $5,000.

Discovered Role of Tissue Composition to Calcification Growth in Breast Cancer [2013-2016]
- Built an agent based model with 1024^2 agents that found the composition of the fatty and dense tissue in the tumor microenvironment impacts calcification growth and chance of metastasis.

LEADERSHIP EXPERIENCE

Data Science Boot Camp Teaching Assistant [September 2023 - present], The Erdos Institute
- Provided oversight and guidance to the Boot Camp attendees during problem solving sessions.

President, VP, and other Elected roles [2016 - present], OSU Cycling Team
- Increased membership by 25% during lockdowns and enhanced the activity of the members with innovative programs and by securing sponsor discounts (15-25%) for our members.

CERTIFICATE

- Spring 2023 Erdos Data Science Certificate Detecting Fake News: Python for Data Science
    - Achieved 67% accuracy by creating an AI/ML model without over correlated features (Author/Source).

1st AUTHOR PUBLICATIONS

- **Plourde SM**, Dawes AT (in preparation) *Mathematical and biological exploration of cellular component maturation based on ground truths*.
- **Plourde SM**, Amom P, Tan M, Dawes AT, Dobritsa AA (2019) *Changes in morphogen kinetics and pollen grain size are potential mechanisms of aberrant pollen aperture patterning in previously observed and novel mutants of Arabidopsis thaliana*. PLOS CompBio. doi link
- **Plourde SM**, et al. (2016) *Computational growth model of breast microcalcification clusters in simulated mammographic environments*, CompBioMed, doi link

CONFERENCES / PRESENTATIONS

- SMB Annual Meeting 2023 - **Invited Speaker -** *Insights from Multi-scale Microscopy and Modeling*
- IGP Annual Symposium 2022 & 2023 - **Selected Speaker -** *in silico & in vivo centrosome dynamics*
- NIH July 202 - *Bridging multiscale modeling and practical clinical applications in infectious diseases*
- Flatiron Institute 2023 - **Invited & funded** - *Mechanics of Life 2: Models and Methods workshop*
- NIMBioS/MBI 2017 Summer Workshop - **Funded** - *Connecting Biological Data with Mathematical Model*