Austin J. Ferguson

(740)370-2768 | fergu358@msu.edu | https://fergusonaj.github.io/
766 Service Rd, Interdisciplinary Science and Technology Room 1100 | East Lansing, MI 48823

Education

Dual Ph.D. Computer Science & Engineering; Ecology, Evolutionary Biology, and Behavior
Advisor: Dr. Charles Ofria
Michigan State University, East Lansing, Michigan — August 2018 - Expected May 2024

Dual B.S. Computer Engineering Technology; Digital Simulation & Gaming Engineering Technology
Minor in Mathematical Science - Summa Cum Laude
Shawnee State University, Portsmouth, Ohio — August 2014 - May 2018

Peer-reviewed Journal Articles

Alexander Lalejini, **Austin J. Ferguson**, Nkrumah A. Grant, and Charles Ofria (2021). Adaptive Phenotypic Plasticity Stabilizes Evolution in Fluctuating Environments. Frontiers in Ecology and Evolution, Vol. 9.

Peer-reviewed Conference Publications

Austin J. Ferguson and Charles Ofria (2023). Potentiating Mutations Facilitate the Evolution of Associative Learning in Digital Organisms. Proceedings of the 2023 Conference on Artificial Life, 496-504.

Katherine G. Skocelas, **Austin J. Ferguson**, Clifford Bohm, Katherine Perry, Rosemary Adaji, Charles Ofria (2022). The Evolution of Genetic Robustness for Cellular Cooperation in Early Multicellular Organisms. Proceedings of the 2022 Conference on Artificial Life, 345-353.

Alexander Lalejini, Emily Dolson, Clifford Bohm, **Austin J. Ferguson**, David P. Parsons, Penelope Faulkner Rainford, Paul Richmond, and Charles Ofria (2019). Data Standards for Artificial Life Software. Proceedings of the 2019 Conference on Artificial Life, 507-514.

Peer-reviewed Extended Abstracts

Alexander Lalejini, **Austin J. Ferguson**, Nkrumah A. Grant, and Charles Ofria (2022). The evolution of adaptive phenotypic plasticity stabilizes populations against environmental fluctuations. (Article summary). Proceedings of the 2022 Conference on Artificial Life, 143-145.

Acacia Ackles, **Austin J. Ferguson**, Connor Grady, and Charles Ofria (2020). Rank-based epistasis: A new metric for understanding epistatis in the absence of quantifiable fitness interactions. Proceedings of the 2020 Conference on Artificial Life, 160-162.

Book Chapters

Austin J. Ferguson, Jose Guadalupe Hernandez, Daniel Junghans, Alexander Lalejini, Emily Dolson, and Charles Ofria (2020). Characterizing the Effects of Random Subsampling on Lexicase Selection. Genetic Programming Theory and Practice XVII.

Contributed Talks

Potentiating Mutations Facilitate the Evolution of Associative Learning in Digital Organisms
Authors: Austin J. Ferguson (speaker), Charles Ofria.
Presented at the 2023 Artificial Life Conference — July 2023

Adaptive phenotypic plasticity stabilizes evolution in fluctuating environments.
Authors: Alexander Lalejini, Austin J. Ferguson (speaker), Nkrumah A. Grant, Charles Ofria.
Presented at the 2022 Artificial Life Conference — July 2022
Presented at the the ERA workshop at the ALife conference for receiving the 2022 ISAL Award for Outstanding Student Publication — July 2022

Seminar Presentations

Historical contingency, potentiation, and digital evolution (oh my!)
Presented at BEACON multi-lab meeting at MSU — September 2023

What is digital evolution and what can it do?
Presented at CSE graduate seminar at MSU — April 2023

Guest Lectures

Randomness and Random Number Generators
CSE 431 - Algorithm Engineering at MSU — October 2022

Workshops

Co-organizer - Emerging Researchers in Artificial Life Workshop — 2020-2021, 2023
Workshop provided an opportunity for students, postdocs, and early-career researchers to learn about the group, present their research, and network in a low-stress environment.

Teaching Experience

Teaching Assistant - CSE491 Secure and Efficient C++ Software Development (MSU) — Fall 2023
Co-designed the course with Dr. Charles Ofria. Assisted in all aspects of the course (e.g., creation of course materials, grading, daily class operation, etc.).

Teaching Assistant - CSE431 Algorithm Engineering (MSU) — Fall 2022
Assisted Dr. Emily Dolson by holding helproom hours, implementing an autograder in Gradescope, giving oral exams, and responding to student questions online.

Co-Instructor - Making a Game of IT (MSU) — Summers 2021-2023
Over the course of a intense, one-week course, we taught Python programming fundamentals to high school students through a game development lens.

Mentor - Mentored the following undergraduates at MSU:
- Valdine Pegy Tchinda — Spring - Fall 2023
- Caroline Gormerly (co-mentored with Kate Skocelas) — Fall 2020
- Nicholas Lloyd (co-mentored with Alex Lalejini) — Summer 2019
- Daniel Junghans (co-mentored with Alex Lalejini) — Summer 2019

Mentor - Workshop for Avida-ED Software Development (WAVES) — Summers 2020 & 2021
Mentored workshop participants Dylan Rainbow (2020), Lanea Rohan, and Aria Killebrew-Bruehl (2021) in software development for Empirical and MABE2.

Supplemental Instructor - Shawnee State University — Springs 2016 & 2017
Assisted professor Jason Witherell with ETGG1803: Concepts of 3D Graphics and Math. Held open lab hours where students could receive additional instruction on concepts and help on assignments.

Outreach & Service

Elected General Chair - Emerging Researchers in Artificial Life — 2022 - 2023
Tasked with overseeing all operations of the ERA board.

Elected Communications Chair - Emerging Researchers in Artificial Life — 2020 - 2021
Managed social media for the group, served as the board's point of contact, and managed file-keeping for chair meetings.

Department Steward - Graduate Employees Union, MSU — 2019 - 2020
Served as a main point of communication between the Computer Science & Engineering department and the graduate union at Michigan State University.

Volunteer - BEACON Center, MSU 2019 - 2020

Attended "Science Nights" and Michigan State University's annual Science Festival to teach elementary-aged students about evolution through hands-on activities.

Senior Panelist - Gaming Department, SSU 2017 - 2018

Served on a panel answering any questions potential students and their families had about the gaming degree, Shawnee State University, and employment opportunities after graduation.

Volunteer Tutor - 14^{th} Street Community Center, Portsmouth, Ohio Fall 2015

Assisted elementary-aged students with homework understanding and oversaw downtime activities after work was completed.

Reviewer

Artificial Life Conference (Sub-Reviewer) 2021 & 2023
BEACON Center grants 2020

Honors & Awards

2022 ISAL Award for Outstanding Student Publication Summer 2022
Engineering Distinguished Scholar, MSU Fall 2018 - Spring 2023
BEACON Top-Up Fellowship, MSU Fall 2018 - Spring 2023
Outstanding Senior in Computer Engineering, SSU Spring 2018
Outstanding Senior in Digital Simulation and Gaming, SSU Spring 2018
Outstanding Supplemental Instructor, SSU Spring 2017
President's List, SSU Fall 2014 - Spring 2017
Shawnee State Presidential Scholarship, SSU Fall 2014 - Spring 2018
Margaret Gurney Noel Scholarship, SSU Fall 2015 - Spring 2016
Centrus Energy Corporation Scholarship, SSU Fall 2014 - Spring 2016
Ralph and Louise Arrick Scholarship, SSU Fall 2014 - Spring 2015

Last updated October 30^{th}, 2023