Alexander Lalejini

Curriculum Vitae

"So far, we have been able to study only one evolving system and we cannot wait for interstellar flight to provide us with a second. If we want to discover generalizations about evolving systems, we will have to look to artificial ones." - John Maynard Smith.

Education

2015–2020 (expected) **Dual PhD in Computer Science and Ecology, Evolutionary Biology, & Behavior**, *Michigan State University*, Advisor: Dr. Charles Ofria.

2011–2015 **Bachelor of Science in Computer Science**, *Mississippi State University*, Advisor: Dr. Cindy Bethel, *GPA – 4.0*.

Experience

Research

Fall 2015 – Present **Digital Evolution Laboratory**, *Michigan State University*, Graduate Student.
Advisor: Dr. Charles Ofria.
I use digital evolution to understand the evolution of complexity. More specifically, I am investigating the evolution of phenotypic plasticity and its role in the evolution of division of labor and major evolutionary transitions.

Spring 2014 – Summer 2015 **Center for Advanced Vehicular Systems (CAVS)**, *Mississippi State University*, Undergraduate Research Assistant.
Mentors: Dr. Daniel Carruth, Dr. Cindy Bethel.
I worked as a member of a research team on the Computational Research for Engineering and Science Ground Vehicles Virtual Testbed Environment Project. Specifically, I worked on integrating the ANVEL Ground Vehicle Simulator with the Robot Operating System, enabling researchers to more easily perform human-robot interaction studies using ANVEL.

1620 Fifth Avenue – Okemos, MI 48864
(228) 342 8299 • alex@lalejini.com • lalejini.com

Fall 2013 – Summer 2015 **Social, Therapeutic, & Robotic Systems (STaRS) Laboratory**, *Mississippi State University*, Undergraduate Research Assistant.
Mentor: Dr. Cindy Bethel.
I worked as a project lead on the Robot Intent and Control Project. We studied the effectiveness of different human-robot interfaces that enable robots to convey behavioral intentions to nearby humans and allow supervisory operators to override that behavior when necessary. Additionally, I assisted in running human-participant studies for various other projects in the STaRS Lab.

Summer 2014 **Laboratory for Autonomous Systems Research (LASR)**, *Naval Research Laboratory, D.C.*, NREIP Summer Intern.
Mentors: Dr. Laura Hiatt, Dr. Greg Trafton.
I researched the effects incorporating contextual information generated by a model of the way humans learn associations between concepts into a robot's object recognition system. I found that while contextual information helped in some situations, like humans, the robot's object recognition system was susceptible to self-fulfilling prophecy effects.

Work

Summer 2012 **Jet Propulsion Laboratory (JPL)**, *Pasadena, CA*, USRP Summer Intern.
Supervisor: William R. Johnson.
I worked as a software developer for a team of optics engineers and geoscientists, modernizing the calibration software for the Near-Nulling Radiometers they used to accurately monitor water surface temperatures. My software enabled the team to perform more efficient and reliable calibrations, improving their ability to field accurate instruments.

Fall 2011 – Spring 2012 **Mississippi State University Physics Department**, *Mississippi State University*, Undergraduate Research Assistant.
Supervisor: Dr. Angelle Tanner.
I developed software for a group of astronomers led by Dr. Angelle Tanner in my school's physics department. I created tools to perform automated data retrieval from the NASA Star and Exoplanet Database, and I processed imagery of stars collected by Dr. Tanner at the Palomar Observatory, assisting in Dr. Tanner's endeavor to document unknown extrasolar planets.

Summers of 2011, 2010, & 2009 **Naval Research Laboratory**, *John C. Stennis Space Center, MS*, Computer Clerk (2011), SEAP Summer Intern (2010, 2009).
Supervisor: Dr. Bruce Lin.
As a high school student, I interned as a software developer on a research team, providing my first exposure to the day to day operations of a research team.

Memberships

2015 – Present **Member, International Society for Artificial Life**

2014 – 2015 **Autonomy sub-team lead, State Space Robotics**
State Space Robotics represents Mississippi State University in the annual NASA Robotic Mining Competition. I led sub-team meetings, distributed tasks among sub-team members, worked closely with other sub-team leaders, and mentored younger sub-team members. I also maintained accountability to our faculty advisor.

2011 – 2015 **Member, Mississippi State University Shackouls Honors College**

Publications

Christopher R. Hudson, Alexander Lalejini, Brandon Odom, Daniel Carruth, Cindy L. Bethel, J.P. Durst, and C. Goodin. Anvel-ros: The integration of the robot operating system with a high-fidelity simulator. In *Proceedings of the 2015 Ground Vehicle Systems Engineering and Technology Symposium (GVSETS)*, 2015.

Alexander Lalejini, Dexter Duckworth, Richard Sween, Cindy L. Bethel, and Daniel Carruth. Evaluation of supervisory control interfaces for mobile robot integration with tactical teams. In *IEEE Workshop on Advanced Robotics and its Social Impacts (ARSO)*, pages 1–6. IEEE, 2014.

Alexander Lalejini and Charles Ofria. The evolutionary origins of phenotypic plasticity. In *15th International Conference for Artificial Life (ALife)*, pages 372–379, 2016.

Posters

Alexander Lalejini and Charles Ofria. The Evolutionary Origins of Phenotypic Plasticity. 2016 Engineering Graduate Research Symposium. Michigan State Unviersity, East Lansing, MI.

Alexander Lalejini. Robot Control. Bagley College of Engineering Undergraduate Poster Competition. April 2014. Mississippi State University, Starkville, MS.

Awards & Honors

2016 **Best Student Paper Award**
Awarded for The Evolutionary Origins of Phenotypic Plasticity at the 15th International Conference for Artificial Life.

2016 **Honorable Mention, Engineering Graduate Research Symposium Recognition for Outstanding Research**
Awarded for the poster, The Evolutionary Origins of Phenotypic Plasticity.

2015 **University Distinguished Fellowship**
Awarded by Michigan State University to 20 out of approximately 500 incoming PhD students.

2015 **BEACON Science and Technology Center Top Up Fellowship**
Awarded by BEACON Center for Evolution in Action to incoming graduate students.

2015 **Stephen D. Lee Scholar**
This designation is reserved for students who graduate with a perfect 4.0 GPA in all courses attempted while earning a bachelor's degree.

2015 **James Worth Bagley College of Engineering Student Hall of Fame**
Awarded by the Bagley College of Engineering at Mississippi State University to students who have demonstrated superior academic achievement, leadership, service, and character.

2015 **Computing Research Association Outstanding Undergraduate Male Researcher Honorable Mention**
Awarded to undergraduate students in North American universities who show outstanding research potential in an area of computing research.

2014 **Bagley College of Engineering Undergraduate Poster Competition Meritorious Poster Award**
Poster title: Robot Control

Service & Outreach

Fall 2015 – Present — Volunteer, BEACON Outreach Activities
I regularly participant in Elementary School Science Nights, teaching concepts in evolutionary biology to students. I also participant in various other education outreach events (*e.g.* MSU Darwin Day, MSU Science Festival).

Fall 2013 – Spring 2015 — Volunteer, Monthly SWAT Training Exercises
I volunteered in monthly training exercises with the Starkville, MS Police Department SWAT team in coordination with the Social, Therapeutic, and Robotic Systems Laboratory. We helped the team train on doing slow and methodical searches of large buildings. We would also bring the lab's SWAT robot to help the team train.

2014 Volunteer Poolside Judge, National SeaPerch Challenge