Jose Guadalupe Hernandez

Professional Contact Information

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Current Positions

Cedars-Sinai Medical Center **7/2023 -**
Position: Postdoctoral Scientist at the Department of Computational Biomedicine
Advisor: Jason H. Moore

Education

Dual PhD in Computer Science and Ecology, Evolution, & Behavior **5/2023**
Michigan State University, East Lansing, MI
Advisors: Dr. Charles Ofria & Dr. Alexander Lalejini
Dissertation: "Beyond benchmarks suites: Engineering diagnostic tools to characterize selection schemes"
Committee: Dr. Charles Ofria, Dr. Alexander Lalejini, Dr. Emily Dolson, Dr. Bill Punch, Dr. Wolfgang Banzhaf

Master of Science in Computer Science **5/2019**
Michigan State University, East Lansing, MI

Bachelor of Science in Computer Science **12/2017**
Michigan State University, East Lansing, MI
Minor: Mathematics

Publications

Icon	Publication venue
	Book section/chapter
	Journal publication
	Workshop publication
	Conference publication

Icon	Other information
	Preprint
	Best student paper award
	GitHub repository
	Link to associated publiation

Peer-reviewed papers

Shakiba Shahbandegan, **Jose Guadalupe Hernandez**, Alexander Lalejini, and Emily Dolson (2022). Untangling phylogenetic diversity's role in evolutionary computation using a suite of diagnostic fitness landscapes. In Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '22). Association for Computing Machinery, New York, NY, USA.

Jose Guadalupe Hernandez, Alexander Lalejini, Emily Dolson, and Charles Ofria. 2019. Random subsampling improves performance in lexicase selection. In Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '19). Association for Computing Machinery, New York, NY, USA.

Peer-reviewed abstracts

Jose Guadalupe Hernandez, Alexander Lalejini, and Charles Ofria. 2022. Measuring the ability of lexicase selection to find obscure pathways to optimality. In Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '22). Association for Computing Machinery, New York, NY, USA.

Jose Guadalupe Hernandez, Alexander Lalejini, and Emily Dolson. 2022. Phylogenetic diversity predicts future success in evolutionary computation. In Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO '22). Association for Computing Machinery, New York, NY, USA.

Book chapters

Lalejini, A., Moreno, M.A., **Hernandez, J.G.**, Dolson, E. (2024). Phylogeny-Informed Fitness Estimation for Test-Based Parent Selection. In: Winkler, S., Trujillo, L., Ofria, C., Hu, T. (eds) Genetic Programming Theory and Practice XX. Genetic and Evolutionary Computation. Springer, Singapore.

Hernandez, J.G., Lalejini, A., Ofria, C. (2022). An Exploration of Exploration: Measuring the Ability of Lexicase Selection to Find Obscure Pathways to Optimality. In: Banzhaf, W., Trujillo, L., Winkler, S., Worzel, B. (eds) Genetic Programming Theory and Practice XVIII. Genetic and Evolutionary Computation. Springer, Singapore.

Hernandez, J.G., Lalejini, A., Dolson, E. (2022). What Can Phylogenetic Metrics Tell us About Useful Diversity in Evolutionary Algorithms?. In: Banzhaf, W., Trujillo, L., Winkler, S., Worzel, B. (eds) Genetic Programming Theory and Practice XVIII. Genetic and Evolutionary Computation. Springer, Singapore.

Ferguson, A.J., **Hernandez, J.G.**, Junghans, D., Lalejini, A., Dolson, E., Ofria, C. (2020). Characterizing the Effects of Random Subsampling on Lexicase Selection. In: Banzhaf, W., Goodman, E., Sheneman, L., Trujillo, L., Worzel, B. (eds) Genetic Programming Theory and Practice XVII. Genetic and Evolutionary Computation. Springer, Cham.

Under review

Jose Guadalupe Hernandez, Alexander Lalejini, Charles Ofria (2022). A suite of diagnostic metrics for characterizing selection schemes. arXiv. https://doi.org/10.48550/arXiv.2204.13839

Miscellaneous

Kevin De Angeli, **Jose Guadalupe Hernandez**, Shang Gao, Eric B. Durbin, Xiao-Cheng Wu, Antoinette Stroupk, Jennifer Doherty, Stephen Schwartz, Charles Wiggins, Linda Coylex, Lynne Penberthyxi, Georgia Tourassi, and Hong-Jun Yoon (2021).“Ensemble Learning for Deploying Robust TextCNN Models for Automatic Information Extraction from Cancer Pathology Reports.” Workshop paper for The Computational Approaches for Cancer workshop series

Teaching Experience

CSE 476: Mobile Apps and Development **2018 & 2022**

Graduate teaching assistant at Michigan State University

- Assisted with teaching a total of ∼200 students concepts on software development for Android mobile applications

CSE 232: Introduction to Programming II **2021**

Graduate teaching assistant at Michigan State University

- Assisted with teaching ∼450 students concepts on object-oriented programming with C++; led two laboratory sections (∼40 students each) where I developed and presented material to help guide students through laboratory assignments

CSE 260: Discrete Structures **2017**

Undergraduate learning assistant at Michigan State University

- Assisted with teaching ∼200 students concepts on mathematical and computation theory

Mentorship

Summer Research Opportunities Program (SROP) **2022**

Student and statistics coach at Michigan State University

- Coached 12 students throughout their summer research experience; most students came from underrepresented groups within STEM
- Led weekly chalk talk sessions for students to practice and iteratively develop their final presentations by providing verbal and written feedback
- Prepared feedback on iterative drafts of documents: posters, presentation slides, personal statements, and research papers
- Held weekly meetings with students to check in on their well-being, confirm they were receiving adequate support from their research group, plan for upcoming deadlines, outline new documents, and discuss feedback on draft documents

Workshop for Avida-ED Software Development (WAVES) **2020**

Student mentor at Michigan State University

- Mentored 6 participants through a ten-week summer paid internship to develop educational tools and software where participants developed genomic prototypes, testing suites, and documentation for in-development computational software

MentorSHPE **2019**

Student mentor for Society of Hispanic Professional Engineers (SHPE)

- Mentored SHPE 2 members at the Michigan State University Chapter by providing myself as a resource for advice and guidance
- Held biweekly meetings with students to check in on their well-being, confirm they were using university resources, and plan for upcoming deadlines

Latino Student Mentoring Program **2017**

Student mentor at Michigan State University

- Mentored 1 first-year Latina student by providing myself as a resource for advice and guidance
- Held biweekly meetings to check in on their well-being, confirm they were using university resources, and plan for upcoming deadlines

Office of Cultural and Academic Transitions 🔗 **2014 & 2015**

Intercultural aide at Michigan State University

- Provided a welcoming and comfortable community for ∼200 assigned dormitory residents
- Contributed to high retention rates through one-on-one conversations, programming events, and other special initiatives
- Interacted with residents from diverse and international backgrounds and connected them with university resources to ensure their academic and social success
- Created weekly events for residents, putting forth an intentional effort to transcend language barriers or disabilities
- Facilitated biweekly discussions to increase cultural and social awareness in an open and safe environment for residents
- Directly mentored residents deemed at-risk by the university to ensure their academic and social success

Mentees

Graduate: David Ackley, Shakiba Shahbandegan

SROP: Eve Vazquez, Saad Bezoui, Isabela Tatem, Aramis Matos, Emarion Best, Ines Kenhoung, Jiordan Washington, Kylia Mack, Michelle Stevens, Yahyla Perez, Zachary Bastian, Kyra Pierce

SHPE: Thomas Ruiz, Areli Cardenas, Anthony Bastidas, Juan Chavez

WAVES: Aria Bruehl, Jamell Deacon, Stephanie Zendejo, Uma Sethuraman, Victoria Cao, Yemi Shin

Outreach

Event lead at Día de Ciencias 🔗 **2023**

- Organized and developed this event focused on increasing student interest and awareness in STEM
- Students participated in hands-on activities, interacted with professional and academic leaders, and explored Michigan State University's campus.
- Most students were from underrepresented groups within STEM

Student mentor at Technovation 🔗 **2018 & 2021**

- Assisted elementary, middle, and high school students from all over Michigan with lessons on how to implement code for Python turtle (2021) and implement code that operates on a BBC micro:bit (2018)
- Most students were from underrepresented groups within STEM

Student mentor at Girls Who Code 🔗 **2019, 2020, & 2021**

- Taught middle and high school students from all over Michigan computer science and covered topics on code development, web development, and problem-solving

Activity leader at Introduce a Girl to Engineering 🔗 **2019 & 2020**

- Presented the importance of women in engineering and hosted a group activity for participants between 6th and 12th grade from all over Michigan

Student mentor at Summer Research Opportunities Program 🔗 **2019**

- Mentored Daniel Junghans through a summer research project regarding understanding the effects of random sampling on lexicase selection
- Held weekly meetings with Daniel to check in on his personal well-being, confirm he was receiving adequate support, discuss research progress and questions, and prepare for a poster presentation 🔗

- Guided Daniel with statistical and data visualization for an ongoing project

Student mentor at Engineering Summer Undergraduate Research Experience **2019**

- Mentored Oscar Vargas through a summer research project regarding the understanding of evolutionary transitions to multicellularity
- Held weekly meetings with Oscar to check in on his personal well-being, confirm he was receiving adequate support, discuss research progress and questions, and prepare for a poster presentation

Activity lead at Coding for More Conference **2019**

- Taught elementary and middle school students how to implement code that operates on a BBC micro:bit at Innovation Central High School, Grand Rapids, MI
- Most students were from underrepresented groups within STEM

Student mentor at Engineering and Science Success Academy **2018**

- Taught an estimated 20 incoming freshman computer science through lessons from the Google Computer Science Summer Institute at Michigan State University
- Most students were from underrepresented groups within STEM

Professional Service

Reviewer

- Artificial Life (ALIFE) Conference 2024 and Genetic and Evolutionary Computation Conference (GECCO) 2024

DEI Steering Committee **2022**

Committee member at Michigan State University

- Reviewed results of surveys and Center for Inclusive Computing (CIC) reports data to identify needs and opportunities to improve DEI
- Shared highlights with faculty and students, and identify questions for focus groups
- Revised data collection plan and identified questions for focus groups to extract informative information for the coming years
- Reviewed best practice recommendations around DEI by CIC and current DEI research in computer science
- Volunteered to participate in the committee

Society of Hispanic Professional Engineers **2019 & 2022**

Graduate advisor at Michigan State University

- Provided support and guidance to the executive board during the planning, implementation, and execution of social and professional events
- Provided myself as a primary point of contact for professional interactions and meetings
- Mentored executive board and members with achieving their academic and career goals

Chairperson Advisory Committee **2021**

Committee member at Michigan State University

- Elected by the computer science student body to represent them as the spokesperson between the community and computer science department chairperson, Abdol-Hossein Esfananian
- Participated in meetings to voice suggestions and concerns regarding the graduate student population

- Created surveys to gather information related to chairperson's goals in regard to the graduate student population

Graduate Studies and Research Committee **2019 & 2020**
Committee member at Michigan State University

- Elected by the computer science student body to represent them as the spokesperson between the community and computer science department
- Participated in meetings with committee faculty to discuss the academic curriculum and research topics investigated within the current faculty
- Contributed to revisions of the graduate student handbook and discussions on applicants for the computer science graduate program

Fellowships & Awards

Dissertation Completion Fellowship (2023)
Amount awarded: $10,000
Travel Grant for Genetic and Evolutionary Computation Conference (GECCO 2022)
Amount awarded: $1,000
Graduate Fellowship from the BEACON Center (2020 & 2022)
Amount awarded: $20,000 per year

GEM Fellowship Program (2020 🔗)
Amount awarded: $16,000

Ford Fellowship Honorable Mention (2020 🔗 & 2021 🔗)

Presentations

2022 *A suite of diagnostics for characterizing evolutionary algorithms.* The Society of Hispanic Professional Engineers National Convention Charlotte, North Carolina.

2022 *Measuring the ability of lexicase selection to find obscure pathways to optimality.* The Genetic and Evolutionary Computation Conference Companion, Boston, MA.

2021 *An Exploration of Exploration: Measuring the Ability of Lexicase Selection to Find Obscure Pathways to Optimality.* Genetic Programming Theory and Practice, Ann Arbor, MI.

2019 *Girls Who Code at Michigan State University*, Michigan Celebration of Women In Computing, Grand Rapids, Michigan.

2018 *Exploring the Effects of Adding Cohorts Within Lexicase Selection*, BEACON NSF Site Visit Poster Session, Michigan State University.

2017 *Evolving Distributed Algorithms with Evolutionary Computation.* Presentations at Michigan State University: BEACON Congress, Mid-Michigan Symposium for Undergraduate Research Experiences, and Summer Research Opportunities Program Presentations.

2016 *Graphical User Interface for Developmental Network.* Presentations at Michigan State University: Mid-Michigan Symposium for Undergraduate Research Experiences and Summer Research Opportunities Program Presentations.