
Education

Indiana University Bloomington*Ph.D. Student in Cognitive Science & Neuroscience*

Bloomington, IN

Aug. 2021 - Present**Xavier University of Louisiana***B.S. in Psychology*

New Orleans, LA

Aug. 2013 - May 2017

Publications

Laborde, Z., & Izquierdo, E. J. (2023, July). Spatial Embedding of Edges in a Synaptic Generative Model of *C. elegans*. In *ALIFE 2023: Ghost in the Machine: Proceedings of the 2023 Artificial Life Conference*. MIT Press.

Severino, G. J., **Laborde, Z.,** & Barwich, A. S. (2023, July). The Degeneracy of Control Architectures in Cell Lineages: Implications for Tissue Homeostasis. In *ALIFE 2023: Ghost in the Machine: Proceedings of the 2023 Artificial Life Conference*. MIT Press.

Laborde, Z., Toler, W., Velhal, K., Farag, T., & Chakra, A. (2019). Method and System for Implementing a Holistic Umbrella Drone. *IP.com*. <https://priorart.ip.com/IPCOM/000257353>

Laborde, Z., & Cohen, J. (2016). Nostalgia and the Perception of Time. *XULAnEXUS*, 14(1). <https://digitalcommons.xula.edu/xulanexus/vol14/iss1/1>

Conference Presentations

Wood, S. M. W., Garimella, M., Desai, B., **Laborde Z.,** & Wood, J. N. (2024, March). *Comparing Newborn Animals and Newborn Machines: A Newborn Embodied Turing Test for the Development of Object Perception*. [Poster presentation]. Cognitive Development Society, Pasadena, CA, USA.

Laborde, Z., & Izquierdo, E. J. (2023, July). *Spatial Embedding of Edges in a Synaptic Generative Model of C. elegans*. [Powerpoint presentation]. ALIFE 2023: Ghost in the Machine, Sapporo, Japan.

Laborde, Z., & Izquierdo, E. J. (2022, November). *Spatial Embedding of Edges in Synaptic Generative Model of C. elegans* [Poster presentation]. Neuroscience, San Diego, CA, USA.

Laborde, Z. & Izquierdo, E. J. (2022, October). *Spatial Embedding of Edges in Synaptic Generative Model of C. elegans* [Poster presentation]. Annual Psychology Graduate Research Symposium & Reception, Bloomington, IN, USA.

Laborde, Z., Stephenson, D., Reiss, A., Beaton, E., & Cohen, J. (2017, March). *Anterior-Posterior Insular Cortex Bisection Plugin for Mango* [Poster presentation]. Cognitive Neuroscience Society, San Francisco, CA, USA.

Laborde, Z., Heatheron, T., & Lopez, R. (2016, August). *You've Got a Friend in Me: Effects of People-based Cues on Amygdala, Orbitofrontal Cortex, and Dorsomedial Prefrontal Cortex* [Poster presentation]. ASURE Poster Night, Hanover, NH, USA.

Laborde, Z., Heatheron, T., & Lopez, R. (2016, July). *Learning to Lose Focus: Relationships Between Reward-Learning, Multitasking, and Distractibility* [Powerpoint presentation]. Leadership Alliance National Symposium, Stamford, CT, USA.

Laborde, Z. & Cohen, J. (2014, November). *Nostalgia and Time Dilation* [Powerpoint presentation]. Charles A. Gramlich Psychology Research Symposium, New Orleans, LA, US

Research Experience

Indiana University Bloomington

Research Assistant

Bloomington, IN

Aug. 2021 - Present

Dr. Justin Wood & Dr. Eduardo Izquierdo

- Cocreated a Python library for comparing the learning performance of artificial agents with real animals by duplicating their environmental conditions in virtual reality (<https://github.com/buildingamind/NewbornEmbodiedTuringTest>)
- Pioneered the evolution of optimal sensorimotor configurations in simulated agents utilizing Continuous Time Recurrent Neural Network (CTRNN) controllers achieving neural networks that were simultaneously smaller and more performant
- Modeled development of a *C. elegans* connectome leading to improved accuracy versus existing models and new perspectives on its structure
- Discovered a new biologically-realistic dynamic control system for cellular lineages with potential applications in synthetic biology and regenerative medicine
- Developed and launched an online application for the dynamical analysis of cellular differentiation in multi-compartment systems integrating multiple control mechanisms (<https://nanohub.org/resources/dynsysregen>)
- Conceived and implemented a novel level set approximation algorithm for high-dimensional manifolds significantly reducing computational complexity and resource usage by 90%

Xavier University of Louisiana

Research Assistant

New Orleans, LA

Aug. 2014 - Jul. 2017

Dr. Jeremy D. Cohen

- Designed, administered, and published a 20 person research study on nostalgia and the perception of time
- Developed several pieces of software, including one automating a 2-4 hour manual process

University of New Orleans

Research Assistant

New Orleans, LA

Aug. 2015 - Dec. 2016

Dr. Jeremy D. Cohen & Dr. Elliot Beaton

- Taught three members how to accurately trace the Insula using the Multi-image Analysis GUI (Mango) MRI program
- Created several shell scripts for transforming tensor neuroimaging data using Advanced Normalization Tools (ANTs)

Dartmouth College

Summer Undergraduate Laboratory Internship - Research Assistant

Hanover, NH

Summer 2016

Dr. Todd F. Heatherton

- Compiled and analyzed gigabytes of 4-dimensional fMRI data using R, SPM, and FSL for correlations between the vmPFC, the reward network, and attention scores from tests developed in MATLAB

Work Experience

IBM

Full Stack Developer

Research Triangle Park, NC

Apr. 2020 - Present

Netcool Operations Insight - Artificial Intelligence Operations

- Developed features to automate event analytics analysis and prediction for operation engineers using machine learning

Full Stack Developer

Nov. 2018 - Apr. 2020

IBM Cloud Event Management

- Developed two internationally-used mobile apps for both Android and iOS

Front End Developer

Apr. 2018 - Nov. 2018

IBM Cloud App Management

- Created front-end visualizations of topological data and analytics

Site Reliability Engineer

Jul. 2017 - Apr. 2018

IBM Hybrid Cloud

- Automated entire team, saving IBM approximately \$1,000,000/year
- Responded to high severity alerts related to several IBM cloud applications

Xavier University of Louisiana

Supplemental Instruction Leader

Psychology Research Methods Spring 2016, Fall 2016

- Co-founded program with Professor Kate Eskine
- Arranged interactive sessions to help students learn research methods

New Orleans, LA
Jan. 2016 - Dec. 2016

Tastee Donuts

Metairie, LA

Assistant Manager

Cashier / Cook / Fryer

Jun. 2015 - Feb. 2016
Jun. 2010 - Aug. 2012, Jun. 2013 - Jun. 2015

Louisiana State University

Archivist

Baton Rouge, LA
Aug. 2012 - Dec. 2012

Skills & Training

Coursework: Computational Modeling of Evolutionary and Adaptive Systems, Neural Engineering, Computational Bioengineering, Theories of Learning and Memory, Machine Learning, Computer Architecture, Network Science, Dynamical Systems Theory, Linear Algebra, Discrete Mathematics

Languages: Python, JavaScript (Node, React, Angular), R, C++, C#, Java, Matlab, Groovy, Mathematica, Ruby

Applications: Jupyter Notebooks, Advanced Normalization Tools, SPM, FSL, ITK-SNAP, Multi-Image Analysis GUI (Mango)

Software: PyTorch, TensorFlow, OpenAI Lab, NumPy, SciPy, Matplotlib, NetworkX, Kubernetes, Docker, Watson SDK, Jenkins, Hadoop, Spark, Git, LaTeX, Linux, Bash, BIOS

Team Management: Agile, Scrum, Design Thinking

Leadership Positions

IBM

Agile Workspace Super Champion

Research Triangle Park, NC
Dec 2018 - Present

IBM New Hire Network

Treasurer

Research Triangle Park, NC
Aug. 2017 - Aug. 2018

Speech & Debate Team - Xavier University of Louisiana

President

Vice President

Treasurer

New Orleans, LA
May 2016 - May 2017
May 2015 - May 2016
Aug. 2014 - May 2015

Speech & Debate Team - Louisiana State University

Treasurer

Baton Rouge, LA
Aug. 2012 - May 2013

Honors & Awards

Rebec Fellow, Indiana University Bloomington, 2024

Rebec Fellow, Indiana University Bloomington, 2022

Security and Privacy by Design Foundations Badge, IBM, 2019

IBM Cloud Private - Continuous Integration/Continuous Delivery Badge, IBM, 2019

Jumpstart Scholar, IBM, 2019

Manager's Choice Award, IBM, Q1 2018, Q1 2019

People's Choice Award, IBM Developer SLAM, 2018

IBM Developer Jumpstart - Explorer Badge, IBM, 2018

IBM Developer Jumpstart - Practitioner Badge, IBM, 2018

Deep Learning Badge, IBM, 2018

Docker Essentials with Watson Conversation Badge, IBM, 2017

IBM Cloud Essentials Badge, IBM, 2017

Enterprise Design Thinking Practitioner Badge, IBM, 2017

Who's Who Among Students in American Universities and Colleges, 2017

1st Place, Xavier-Dillard Coding Competition, 2017

Dean's List, Xavier University of Louisiana, Fall 2015, Spring 2016, Spring 2017

National Semifinalist in Impromptu Speaking, Forensics Novice Nationals, 2013

National Semifinalist in Impromptu Sales, Forensics Novice Nationals, 2013

National Competitor in Extemporaneous Speaking, American Forensics Association's National Individual Event Tournament, 2013

Volunteer Experience

St. Augustine High School Debate Coach

70+ hours

New Orleans, LA

Aug. 2015 - May 2017