zlaborde@iu.edu

Zachary Laborde

zacharylaborde.com

Education

Indiana University Bloomington   Bloomington, IN
Ph.D. Student in Cognitive Science & Neuroscience   **Aug. 2021 - Present**

University of North Carolina at Chapel Hill   Chapel Hill, NC
Non-degree seeking   **Aug. 2019 – Dec 2019**

Xavier University of Louisiana   New Orleans, LA
B.S. in Psychology   **Aug. 2013 - May 2017**

Louisiana State University   Baton Rouge, LA
Worked towards a B.S. in Psychology   **Aug. 2012 - May 2013**

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

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.

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.

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.

Laborde, Z., Heatherton, 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.

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

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

Research Experience

Indiana University Bloomington Bloomington, IN
Research Assistant **Aug. 2021 - Present**
Professor Eduardo Izquierdo
- Invented algorithm for more efficiently approximating levelset on a high-dimensional manifold
- Simulated the development of a *C. elegans* connectome with a generative model, leading to improved accuracy compared with existing models
- Discovered a new biologically-realistic dynamic control system for cellular lineages
- Created an interactive, online application for the dynamical analysis of multi-compartment cellular differentiation using multiple control mechanisms (see https://nanohub.org/resources/dynsysregen)

Xavier University of Louisiana New Orleans, LA
Research Assistant **Aug. 2014 - Jul. 2017**
Professor 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 New Orleans, LA
Research Assistant **Aug. 2015 - Dec. 2016**
Professor Elliot Beaton & Professor Jeremy D. Cohen
- 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 Hanover, NH
Summer Undergraduate Laboratory Internship - Research Assistant **Summer 2016**
Professor 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 Research Triangle Park, NC
Full Stack Developer **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
- Responded to high severity alerts related to several IBM cloud applications
- Automated entire team, saving IBM approximately $1,000,000/year

Xavier University of Louisiana New Orleans, LA
Supplemental Instruction Leader **Jan. 2016 - Dec. 2016**
Psychology Research Methods Spring 2016, Fall 2016
- Co-founded program with Professor Kate Eskine
- Arranged interactive sessions to help students learn research methods

Tastee Donuts
Metairie, LA
Assistant Manager   **Jun. 2015 - Feb. 2016**
Cashier / Cook / Fryer   **Jun. 2010 - Aug. 2012, Jun. 2013 - Jun. 2015**

Louisiana State University   Baton Rouge, LA
Archivist   **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, Mathematica, R, C++, C#, Java, JavaScript (Node, React, Angular), Matlab, Groovy, Ruby

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

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

Team Management: Agile, Scrum, Design Thinking

Leadership Positions

IBM   Research Triangle Park, NC
Agile Workspace Super Champion   **Dec 2018 - Present**

IBM New Hire Network   Research Triangle Park, NC
Treasurer   **Aug. 2017 - Aug. 2018**

Speech & Debate Team - Xavier University of Louisiana   New Orleans, LA
President   **May 2016 - May 2017**
Vice President   **May 2015 - May 2016**
Treasurer   **Aug. 2014 - May 2015**

Speech & Debate Team - Louisiana State University   Baton Rouge, LA
Treasurer   **Aug. 2012 - May 2013**

Honors & Awards

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   New Orleans, LA
70+ hours   **Aug. 2015 - May 2017**