Zachary Laborde

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An award-winning Research Scientist (Google Fellowship Nominee, ALIFE Best Student Paper Award) blending 4 years of high-impact software engineering at IBM ($1M savings) with pioneering research in embodied AI. Expertise in training intelligent agents in advanced robotics simulations (Unity, Isaac Sim) using modern AI frameworks (PyTorch, JAX) and RL (Stable Baselines, RLlib).

EDUCATION

Indiana University Bloomington **May 2026**
PhD in Cognitive Science & Neuroscience
Research Focus in NeuroAI & Embodied AI

Xavier University of Louisiana **May 2017**
BS in Psychology, Minor in Computer Science

SKILLS

AI/ML Frameworks: PyTorch, Lightning, Stable Baselines, RLLTE, TensorFlow, Scikit-learn, Transformers, JAX, Ray RLlib
Simulation Software: Unity, Unity ML Agents, Gymnasium, Petting Zoo, MuJoCo, Nvidia Isaac Sim, Nvidia Isaac Lab, SuperSuit
Data Science & Ops: Hadoop, Spark, MongoDB, BigQuery, Cassandra, Git, Kubernetes, NumPy, SciPy, Matplotlib, Jupyter, HPC
Research Techniques: Feature Visualization, Saliency/Attention Maps, Hyperparameter Tuning, Research Methods, Data Analysis
Languages: Python, JavaScript, R, Shell, SQL, C#, C++, Mathematica, Java, MATLAB, Groovy, Ruby, Go, HTML, CSS

RELEVANT WORK EXPERIENCE

IBM Software Engineer **Jul 2017 – Aug 2021**

- Automated international team of SREs across 3 continents in 5 countries, saving IBM approximately $1,000,000/year
- Automated operations event analytics analysis & prediction with machine learning, implementing & developing APIs
- Developed two internationally used mobile apps for both Android & iOS used across 7 countries
- Invented design for autonomous umbrella drone to autonomously keep users dry *(Published to IP.com (2019))*

RESEARCH EXPERIENCE

Indiana University Bloomington Dr. Justin N. Wood & Dr. Eduardo Izquierdo **Aug 2021 – Present**

- Created Python library to benchmark AI agent learning performance against real animals in Unity VR environments across 8 experiments, training neural networks (ViT, CNN, LSTM, MLP, etc) using PPO & intrinsic rewards (ICM, RND, RIDE, etc) *(Publication in progress; Presented at Cognitive Development Society (2024); code publicly available)*
- Evolved millions of sensorimotor configurations in simulated agents, applying a genetic algorithm on Continuous Time RNN (CTRNN) controllers, achieving neural networks that were 67% the size & 30% more performant *(code publicly available)*
- Discovered dynamic multi-control system for cell lineages with application in synthetic biology & regenerative medicine *(Published to International Society for Artificial Life (2023); online application available)*
- Modeled development of C. elegans connectome with average connection lengths 60% more accurate than existing models *(Published to International Society for Artificial Life (2023); Presented at Society for Neuroscience (2022); code available)*
- Implemented level set algorithm for high-dimensional manifolds, reducing complexity & resource usage by 90%

Xavier University of Louisiana Dr. Jeremy D. Cohen **Aug 2014 – Jul 2017**

- Developed software to bisect brain region in MRI scans, automates 3-hour process down to seconds, >100x speed improvement *(Presented at Cognitive Neuroscience Society (2017); code publicly available)*
- Designed & administered 20 person study on nostalgia & time perception, bootstrapping results & applied ANOVA on data *(Published in XULAneXUS (2016); Presented at Charles Gramlich Research Symposium (2015))*

Dartmouth College Dr. Todd F. Heatherton **Summer 2016**

- Analyzed GBs of 4D fMRI data with R, SPM, & FSL correlating brain activity & attention using tests made in MATLAB *(Presented at Leadership Alliance National Symposium (2016))*

RELEVANT OPEN-SOURCE CONTRIBUTIONS

RLE-Foundation/rllte: Fixed a bug for calculating inverse model loss in multi-dimensional action spaces
Unity-Technologies/ml-agents: Submitted PR to add compatibility with Gymnasium library, replacing deprecated OpenAI Gym

HONORS & AWARDS

Google: PhD Fellowship Nominee (2024)
International Society for Artificial Life: Best Student Paper Award (2024)
Indiana University Bloomington: Rebec Fellow (2022 & 2024)
IBM: Manager's Choice Award (Q1 2018 & Q1 2019)
IBM Developer SLAM: People's Choice Award (2018)
Xavier-Dillard Coding Competition: 1st Place (2017)
Novice National Intercollegiate Forensics Tournament: National Semifinalist in Impromptu Speaking (2013)
American Forensics Association National Tournament: National Competitor in Extemporaneous Speaking (2013)