Zachary Laborde

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SUMMARY

An award-winning research scientist blending 4 years of high-impact software engineering at IBM with pioneering research in Embodied AI. Expertise in training intelligent agents in advanced robotics simulations using modern AI frameworks and RL.

EDUCATION

Indiana University   Bloomington, IN
PhD, Cognitive Science & Neuroscience   Expected May 2026
  Research Focus: *Embodied AI & NeuroAI*

Xavier University of Louisiana   New Orleans, LA
BS, Psychology & Computer Science (minor)   May 2017

SKILLS

AI/ML Frameworks: PyTorch, TensorFlow, Lightning, Stable Baselines, RLLTE, Scikit-learn, Transformers, JAX, Ray RLlib
Simulation Software: Unity, Unity ML Agents, Gymnasium, Petting Zoo, MuJoCo, Nvidia Isaac Sim, Nvidia Omniverse, SuperSuit
Data Science & Ops: HPC, Kubernetes, Hadoop, Spark, MongoDB, Slurm, BigQuery, Cassandra, Git, NumPy, SciPy, Matplotlib
Programming Languages: Python, C++, SQL, Go, JavaScript, R, Shell, C#, Mathematica, Java, MATLAB, Groovy, Ruby

PROFESSIONAL EXPERIENCE

IBM   Research Triangle Park, NC
Software Engineer   July 2017 – August 2021

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

RESEARCH EXPERIENCE

Indiana University   Bloomington, IN
Graduate Researcher   August 2021 – May 2026

- Created Python library and custom Gym environments to benchmark embodied AI agent learning to real animals in Unity across 12 experiments, training 10 different neural network architectures using 13 types of intrinsic reward using RL.
  - Publication in progress - Presented at Cognitive Development Society (2024) - link to code.
- Evolved agent sensorimotor configs with genetic algorithm, finding neural networks 33% smaller & 30% more performant.
  - link to code.
- Discovered dynamic control system for multiple cell lineages capable of autonomously creating balance of cell types.
  - Published to International Society for Artificial Life (2023) - link to interactive web app.
- 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) - link to code.

Dartmouth College   Hanover, NH
Research Assistant   June 2016 – August 2016

- Analyzed 30+ 4D fMRI tensors with Statistical Parametric Mapping to assess relationship between attention & brain activity.
  - Presented at Leadership Alliance National Symposium (2016).

Xavier University of Louisiana   New Orleans, LA
Research Assistant   August 2014 – July 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) - link to code.
- Designed & administered 20 person study on nostalgia & time perception, using ANOVA on 1000s of bootstrapped samples.
  - Published in XULAneXUS (2016) - Presented at Charles Gramlich Research Symposium (2015).

HONORS & AWARDS

- Google PhD Fellowship Nominee, 2024.
- Best Student Paper Award at the International Society for Artificial Life (ALIFE) Conference, 2024.
- Rebec Fellow at Indiana University Bloomington, 2022 & 2024.
- Manager's Choice Award at IBM, Q1 2018 & Q1 2019.
- 1st Place at Xavier-Dillard Coding Competition, 2017.
- National Semifinalist in Impromptu Speaking at Novice National Intercollegiate Forensics Tournament, 2013.