

ZACHARY RYAN LEE

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EDUCATION

University of Illinois Urbana-Champaign

Champaign, IL

BS in Computer Science & Statistics, Minors in Math, Data Science & Game Design GPA: 3.7 | *Expected: May 2027*

EXPERIENCE

Software Engineer Intern

Jan. 2026 – Present

NASA - National Aeronautics and Space Administration

Merritt Island, FL

- Incoming spring 2026 intern

Software Engineer Intern

Jun. 2025 – Aug. 2025

Air Force Research Laboratory

Rome, NY

- Engineered a scalable GAT-DQN RL system for adversarial pathfinding on static graphs, achieving 95% optimal routes and 87% adversary deception using PyTorch and PyTorch Geometric.
- Built automated benchmarks across search, GNNs, and differentiable planners, identifying feature-transform attack risks while profiling generalization and latency behavior at scale.

Software Engineer

Feb. 2025 – May 2025

Companions Journeying Together

Chicago, IL

- Improved audio story delivery serving 2,000+ families by implementing PHP/CodeIgniter 4 async job queues and checksum validation on AWS S3 with MySQL, cut latency by 52%, reaching 99% delivery success.
- Collaborated with a team of volunteer developers to add new features, resolve bugs, and maintain the system, ensuring seamless audio story delivery for 100+ daily users via an innovative online platform.

Founding Engineer

Nov. 2024 – Present

Capa

Remote, USA

- Integrated the Sysolution Xixun Java SDK with a Java/Spring Boot service on AWS EC2 behind Nginx, streaming GPS from 50+ LED controllers into MySQL and broadcasting over WebSocket maintained 99.9% uptime.
- Built from scratch a Google Maps SPA using ES6 modules, Fetch API, and client-side caching to render GeoJSON layers with clustering, geofences, replay, and alerts, p95 locate <2 s and 70% fewer manual check-ins.

AI Researcher

May 2025 – Nov. 2025

Algoverse

Berkeley, CA

- Built FIRM: Pinpoint Tuning + Debaised Steering Vectors, with a Bias Diagnostic Pass localizing biased heads/layers via activation patching + causal tracing in TransformerLens, and circuits visualized in CircuitsVis.
- Evaluated on 10 models across 10 bias tasks totaling 50k samples, achieving 47.6% mean bias reduction (up to 78.8%) with accuracy preserved. Manuscript accepted at BlackboxNLP @ EMNLP 2025.

Research Assistant

Sep. 2024 – Present

University of Illinois Urbana-Champaign, Dr. Daniel Kang

Champaign, IL

- Built a human-in-the-loop LLM annotation pipeline with Monte Carlo sampling (importance + control variates), confidence triage, and SQL generation, yielding valid CIs, 92% lower error, and 2.57× fewer labels.
- Refined implicit-bias baselines using Hugging Face + OpenAI, tuning NER and calibration to raise noisy-text F1.

PROJECTS

Project Echo Ridge | *Python, PostgreSQL, Redis, Playwright, Docker, Pydantic, RapidFuzz* June 2025 – Nov. 2025

- Built PMF Deep Researcher, a production 12 stage pipeline that discovers and enriches companies across regions.
- Enforces budgets and limits, UPSERTs evidence in PostgreSQL, and ships bundles via Docker + Redis.

LeData | *React, Three.js, Tailwind, Python, Azure ML, PPO, Q-Learning, Monte Carlo* Oct. 2025 – Dec. 2025

- Built RL LEO datacenter using Azure + Three.js, +830% efficiency and +40% safety across 200+ satellites.
- Selected as a Global Nominee in the NASA International Space Apps Challenge from 9k+ submissions worldwide.

TECHNICAL SKILLS

Languages: Python, C++, Java, JavaScript/TypeScript, C#, Kotlin, PHP, Bash, SQL, HTML/CSS, Git

Databases & Tools: MySQL, PostgreSQL, Linux, Git, Docker, Nginx, AWS (EC2, S3, RDS), Firebase, Spring Boot, CodeIgniter 4, REST APIs, WebSockets

AI/ML: PyTorch, TensorFlow, scikit-learn, XGBoost, LightGBM, Pandas, OpenCV, Hugging Face Transformers