Adithya Srinivasan

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Technical Skills

Domains: Machine Learning/Deep Learning, Computer Vision, Recommender Systems, Operating Systems, Computer Architecture, Compiler Engineering, Linux/Unix, Observability
Languages: Python, C, C++, Rust, Ruby, HTML/CSS, JavaScript, SQL, ASM, Bash
Frameworks: PyTorch, TensorFlow, Pandas, NumPy, ReactJS, NextJS, FastAPI, CUDA, OpenMP
Tools: PostgreSQL, Redis, Azure, Git, CI/CD, Docker, LLVM/Clang, eBPF, CMake,

Experience

Exaforge Labs | Co-Founder & Researcher **Oct 2025 – Present**

- Co-founded an AI research lab developing autonomous scientific systems across multi-agent simulation, autoresearch, and LLM evaluation.
- Built Extropy, an open-source, stateful population-simulation engine combining grounded population synthesis, social-network propagation, and agent-level traces.
- Co-authored *Search Discipline for Long-Horizon Research Agents*, studying how autonomous agents choose scientific hypotheses and building a post-decision monitor that uses existing benchmark results to distinguish robust progress from metric-driven optimization gaming.

SASTRA University | Research Assistant **Nov 2022 – Feb 2024**

- Developed GNN-based collaborative filtering and data mining for movie recommendations and unsupervised anomaly detection models using transformer architectures; published 3 peer-reviewed papers (IEEE, Springer)
- Worked in Microsoft Innovative Computing Lab on unsupervised temporal event detection in video streams

e-con Systems | Application Development Intern **Jun 2023 – August 2023**

- Developed PyQt-based calibration tool for USB 3.0 cameras enabling real-time register modification without hardware access, reducing developer setup time

Projects

Extropy | *Python, NumPy/SciPy, NetworkX, Pydantic, Agent-Based Modeling* **Dec 2025 – Present**

- Co-founded open-source simulation engine for 10k+ agent populations with LLM-powered reasoning, psychographic trait modifiers, and automated demographic synthesis; validated statistical accuracy against real-world adoption curves
- Published technical deep-dives and geopolitical simulation case studies demonstrating emergent multi-week behavioral forecasting and predictive analytics [*BLOG*]

Search Discipline for Long-Horizon Research Agents | *Python, LLM agents, LLM-as-judge* **May 2026 – Jun 2026**

- Built an external research-control loop that tracks how autonomous agents generate, test, and select hypotheses, intervening at key decision points to challenge weak candidates and reopen prematurely concluded searches.
- Analyzed candidates using the benchmark's existing disaggregated results to determine whether headline improvements reflected broad, robust progress or narrow optimization that degraded important subsets. [*PAPER*]

re:compile - AI native C/C++ Compiler Debugger | *C, C++, Rust, LLVM, eBPF, CMake* **Sep 2025 – Present**

- Developed open-source compiler toolchain integrating LLVM/Clang passes with eBPF probes and sanitizers (ASan/TSan/MSan/UBSan) for automated bug detection in ML training infrastructure
- Built crash analysis pipeline: automated core dump collection, stack trace deduplication, heap visualization for debugging distributed training failures; reduced debug time from hours to minutes
- Cross-platform support (Linux/macOS/Windows) with CI integration for regression detection

Education

North Carolina State University **Raleigh, NC, USA**
Masters of Computer Science; GPA - 4.0 *Aug. 2024 – May 2026*
Relevant Coursework: Operating Systems, Architecture of Parallel Computers, Advanced Distributed Systems

SASTRA University **Tanjore, India**
Bachelor of Technology in Computer Science; GPA - 8.57/10.00 *Sep. 2020 – Jun 2024*
Relevant Coursework: Data Structures and Algorithms, Distributed Systems, Big Data Analytics

Publications

[1] Adithya, S., Devesh, P. (2026). Search Discipline for Long-Horizon Research Agents [*arXiv*]
[2] Karthik, R., **Adithya, S.**, et al. (2024). Video anomaly detection using factorized self-attention transformer. [*IEEE CINS*]
[3] Adithya, S., et al. (2024). A transformer approach for weakly supervised abnormal event detection. [*IEEE ICETITE*]
[4] Adithya, S., et al. (2023). Graph Neural Network-Based Collaborative Filtering for Movie Recommendation. [*Springer HIS*].