

Sairam Vaidya Mahadeva Ganapathy

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EDUCATION

- **University of California, San Diego** San Diego, CA
M.S. in Computer Science (GPA: 3.91/4.0) *Sep. 2024 – Exp. Jun. 2026*
- **P.S.G. College of Technology** Coimbatore, India
B.E. in Computer Science and Engineering (CGPA: 9.70/10.0) *Jun. 2019 – May 2023*

RESEARCH EXPERIENCE

- **Loris Research Lab, UC San Diego** San Diego, CA
Graduate Student Researcher | Advisor: Loris D'Antoni *Jan. 2025 - Present*
 - Developed a dialect-agnostic fuzzing framework for MLIR compilers, achieving 10-120% coverage improvement and discovering 88 previously unknown bugs.
 - Developed constrained sampling algorithms for language models, including MCMC and adaptive rejection sampling variants for grammar-constrained generation.

PUBLICATIONS

- **Bootstrapping Fuzzers for Compilers of Low-Resource Language Dialects Using LMs** 
arXiv Preprint | S. Vaidya, M. Böhme, L. D'Antoni
- **Constrained Adaptive Rejection Sampling** 
arXiv Preprint | P. Parys, S. Vaidya, T. Berg-Kirkpatrick, L. D'Antoni
- **Constrained Sampling for Language Models Should Be Easy: An MCMC Perspective** 
NeurIPS 2025 | E. Anaya Gonzalez, S. Vaidya*, K. Park, R. Ji, T. Berg-Kirkpatrick, L. D'Antoni*

SELECTED PROJECTS

- **Stateful Authorization for Model Context Protocol Servers** 
Python, Cedar Policy Language, MCP *Fall 2025*
 - Developed a stateful authorization framework for AI agents interacting with external services via MCP, using task-specific policies and state-aware evaluation.
 - Achieved 90% accuracy in blocking unauthorized operations compared to 42.5% for stateless baselines on a GitHub MCP server case study.
- **Convex IRL: Inverse Reinforcement Learning** 
Python, Convex Optimization, Reinforcement Learning *Winter 2025*
 - Implemented convex formulation of inverse reinforcement learning with global optimality guarantees, addressing non-convexity challenges in traditional maximum entropy IRL approaches.
 - Demonstrated robustness to noisy expert demonstrations through convex relaxation techniques, enabling reliable reward function recovery in continuous state-action spaces.
- **SemGuS-LENS: LLM-Guided Program Synthesis** 
Python, Lisp, PyTorch, Program Synthesis *Fall 2024*
 - Bottom-up enumerator for Semantic-Guided Synthesis (SemGuS) that combines probabilistic enumeration with iterative PCFG refinement.
 - Integrated LLM feedback to dynamically adjust grammar production weights, improving synthesis efficiency for under-specified semantic constraints.

INDUSTRY EXPERIENCE

- **Morgan Stanley** Bengaluru, India
Technology Associate *Jul. 2023 - Aug. 2024*
 - Contributed to CVA pricing analysis engine for derivatives trading, optimizing performance of risk calculation pipelines to support real-time valuation across FX and commodity products.
 - Architected GDPR-compliant data anonymization framework using microservices with containerized deployments, scaling to handle 150K records/sec across 46 enterprise systems (Best Project Award, 2024).

- **Morgan Stanley** Bengaluru, India
Technology Analyst Intern *Jan. 2023 - Jun. 2023*
 - Engineered real-time Quote Tool for pre-trade pricing analysis of IR products (FX Options, Forwards), automating manual analysis process from 1-2 days to ~10 seconds.

- **J.P. Morgan Chase & Co.** Mumbai, India
Software Engineer Intern *Jun. 2022 - Jul. 2022*
 - Developed low-latency microservices for trading systems, optimizing database refresh operations and implementing automated testing to ensure data consistency and system reliability in production environments.

SKILLS

- Python, Scala, C++, PyTorch, MLIR, LLVM, Constrained Decoding, Grammar-Based Fuzzing, LLM Inference (vLLM, Transformers), SMT Solvers, Program Synthesis

TEACHING EXPERIENCE

- **Teaching Assistant:** CSE 20 - Discrete Mathematics, UC San Diego (Fall 2025)
- **Teaching Assistant:** CSE 20 - Discrete Mathematics, UC San Diego (Summer 2025)

AWARDS & HONORS

- **Silver Medalist (2nd Rank, Department):** P.S.G. College of Technology (2023)
- **iHub-Data Mobility Fellowship:** Indian Institute of Information Technology (2022)