SAMUEL XIFARAS

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New York, NY

EDUCATION

Khoury College of Computer Sciences, Northeastern University — Boston, MA
MS in Computer Science — *September 2022 – December 2024*
GPA: 4.00/4.00
Relevant Coursework: Computer-Aided Reasoning; Compilers
Thesis Title: Leveraging Type Annotations for Effective Fuzzing of Python Programs
Thesis Advisor: Dr. Panagiotis Manolios

Khoury College of Computer Sciences, Northeastern University — Boston, MA
BS in Computer Science — *September 2018 – May 2022*
GPA: 3.92/4.00
Relevant Coursework: Graduate-level Computer Systems; Graduate-level Artificial Intelligence; Database Design; Theory of Computation; Networks and Distributed Systems; Object Oriented Design; Graduate-level Algorithms; Logic and Computation
Honors and Awards: Khoury College Dean's List: Fall 2018, Spring 2019, Fall 2019, Fall 2020, Fall 2021, Spring 2022
Positions: Teaching Assistant for Object Oriented Design, Fall 2020

Phillips Academy Andover — Andover, MA
GPA: 5.43/6.00 — *September 2014 – June 2018*
Relevant Coursework: Data Mining, Machine Learning, Data Structures and Algorithms, Data Visualization, The Open Source Movement

SKILLS

Languages (Proficient): Python, JavaScript/TypeScript, Java, C#, HTML/CSS, C, Racket (Scheme), Common Lisp, SQL
Languages (Familiar): Ruby, R, Julia, Swift, C++
Technologies and frameworks: ACL2/ACL2s, Django, Flask, FastAPI, ReactJS, Docker, PostgreSQL, MongoDB, PyTorch, NumPy, Pandas, scikit-learn, NLTK (Natural Language Toolkit) for Python, Jupyter, d3.js, MySQL, SQLite, SLURM, Terraform
Cloud services: AWS (EC2, S3, ECS, Route53, RDS, Managed OpenSearch, SQS, SNS, Lambda), Datadog

PUBLICATIONS

Samuel Xifaras, Panagiotis Manolios, Andrew Walter, and William Robertson. *An Enumerative Embedding of the Python Type System in ACL2s*. Submitted to ACL2 Workshop 2025, Accepted March 9, 2025. https://arxiv.org/pdf/2507.19015.

WORK EXPERIENCE

Stripe — New York, NY
Backend/API Engineer — *June 2025 – Present*

- Platformizing Stripe's billing infrastructure through the creation of a centralized product catalog
- Building tools to enable the selling team to translate their negotiated deal contracts into billing configuration in the system across product lines

Raven (RA Ventures) — Boston, MA
Software Engineer III, Full Stack — *February 2025 – June 2025*

- Acted as **founding engineer** for our first incubated company build
- Developed **evaluation metrics** and **test suites** for performance monitoring of an LLM-based system
- Built **two AI-native prototypes**: a diagnostic chatbot and a clinical trial compensation calculator
- Gained exposure to latest AI tools and APIs, including **OpenAI Agents SDK** for applications, and **Cursor** for development

Paperless Parts — Boston, MA
Software Engineer I → Software Engineer II — *August 2021 – January 2025*

- Led design and development of an RFQ forwarding service which has become an integral part of customers' workflow–this service handles receipt of ∼**400 emails per day**, and the top 10 most active users of the service represent **$219k** of ARR for the business
- Designed and built a faceted search backend using **functional programming techniques** to maintain tight state control

- Implemented and maintained encryption standards for **FedRAMP Moderate compliance**
- Acted as a **forward-deployed** engineer, evangelizing beta features that I developed to customers at on-site visits
- Spearheaded a project to deep-dive into our search feature (based on **OpenSearch**) and optimize its performance
- Led a backend engineer Community of Practice for eight months, with a focus on tackling tech debt, standardizing development and testing best practices, and pushing for initiatives that improve developer experience
- Mentored two co-ops

Paperless Parts Boston, MA
Software Engineering and DevOps Co-op *January 2021 – May 2021*

- Implemented features to enhance workflows in the core product with **ReactJS** and **Django** across the full stack
- **Worked directly with a customer** to build an integration between the Paperless Parts platform and their ERP system

nference Cambridge, MA
Data Science/Software Engineering Co-op *September 2019 – August 2020*

- Led frontend development with **ReactJS** for a "Competitive Landscape" data mining tool for Janssen
- Collaborated independently with offshore API development team to coordinate on API contracts and expectations
- **Interfaced directly with Janssen clients** at monthly meetings to discuss progress and feature requests
- Developed **2** APIs–for storing image annotation data and retrieving financial market data–using **Python**, and **MongoDB**
- Produced biomedical data analyses and visualizations with **Pandas, scikit-learn, and R** for **2** Janssen client projects

RESEARCH EXPERIENCE

Khoury College of Computer Sciences, Northeastern University Boston, MA
Master's Thesis *January 2023 – November 2024*
Thesis Title: Leveraging Type Annotations for Effective Fuzzing of Python Programs
Thesis Advisor: Dr. Panagiotis Manolios
PDF Link: samx.io/papers/thesis.pdf
Synopsis:

> My thesis, "Leveraging Type Annotations for Effective Fuzzing of Python Programs," was motivated by the poor state of static analysis tooling for Python. Tools available today emit many false positives, and my thesis advisor and I hypothesized that a hybrid static-dynamic approach would work better for a highly dynamic and duck-typed language like Python. I explored extracting Python type annotations and leveraging them to fuzz Python programs more holistically and intelligently. Then, I implemented a fuzzer based on this approach and performed a rigorous experimental evaluation on open-source Python repositories. We indeed found that this approach shows promise, and several bugs were identified and reported.

- Implemented fuzzing tool from scratch in **Python** with strong **object-oriented design** principles to facilitate rapid extension
- Evaluated on **15** open source repositories, and reported several real-world bugs that were discovered during evaluation
- Developed infrastructure to orchestrate running of experiments and results collection on a SLURM-based HPC environment
- **Dockerized** the application, in preparation for potential commercial deployment

Khoury College of Computer Sciences, Northeastern University Boston, MA
Research Assistant *January 2022 – May 2022*

- Implemented a neural network portfolio–an ensemble of several neural networks–with **PyTorch**
- Used open-source neural network verification tooling to **formally prove** bounded error for the chosen application: a learned database index
- Developed infrastructure to run experiments and collect results

COMMUNITY ENGAGEMENT

The Family Pantry of Cape Cod Harwich, MA
Gardener *Summer 2022 – Present*

- Co-founded Oasis with Will Stenzel, with the mission of making obtaining software project experience accessible to Khoury college undergraduates who are looking for their first co-op opportunity
- Oasis continues to be successful in our absence, and membership has grown significantly

Interests: gardening, hiking, biking, tennis, electronic music production, investing, classical piano