Georgios Sakkas

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Google Scholar Profile | GitHub Profile | LinkedIn Profile | Personal Website

WORK EXPERIENCE

Microsoft Research (Redmond, WA, U.S.A.) — Jun. 2022 - Sep. 2022
- *Research Intern* at the *Research in Software Engineering (RiSE) Group* working with Shuvendu Lahiri
- Publication on *interactive code generation via test-driven user intent formalization*, using program synthesis, static analysis, and state-of-the-art LLMs (Codex, InCoder, CodeGen etc.)

Amazon.com (San Francisco, CA, U.S.A.) — Jun. 2021 - Sep. 2021
- *Applied Scientist Intern* at the *CodeGuru Reviewer team* of the Automated Reasoning Group
- Extended a *taint-analysis tool's data-flow operations* to capture constraints and add path sensitivity to the analysis

Bloomberg L.P. (New York, NY, U.S.A.) — Jun. 2020 - Aug. 2020
- *Software Engineer Intern* at the *Static Analysis & Automated Refactoring team* of the Developer Experience group
- Implemented a *new automated control-flow refactoring tool* for legacy Fortran code

PwC (Athens, Greece) — Sep. 2017 - Oct. 2017
- *Intern* in the *System & Data Assurance team* of the Risk Assurance Services department
- Implemented a *new authorization hierarchy in SAP* and developed *data analysis scripts* for the team & customers

ACADEMIC RESEARCH EXPERIENCE

UC San Diego, U.S.A. — Sep. 2018 - Present
- *PhD Candidate* in Programming Systems group — *Advisor:* Prof. Ranjit Jhala
- *Focus:* Neurosymbolic Program Repair using Programming Languages & Machine Learning research, including Formal Methods, Static Analysis, Neural Networks & LLMs

National Technical University of Athens, Greece — Nov. 2016 - Jul. 2018
- *Research Assistant* in Software Engineering Laboratory (Softlab) — *Supervisor:* Associate Prof. Nikolaos Papaspyrou
- *Thesis:* Resumption Monad Transformers and their Applications in the Semantics of Concurrency

Rutgers, The State University of New Jersey, U.S.A. — Jul. 2016 - Aug. 2016
- *Visiting Research Student* in ParaMathics group — *Supervisor:* Assistant Prof. Maryam Dehnavi
- Worked on High Performance Computing, Parallel Computing, Testing in HPCs (XSEDE, Stampede)
- *Cache Oblivious Algorithms:* Implemented algorithms in a Cache Oblivious manner in C/C++ & parallel versions of them using OpenMP, Cilk and MPI; Tested on XSEDE supercomputers for scalability and performance

PUBLICATIONS

1. *Neurosymbolic Modular Refinement Type Inference* – **G. Sakkas**, P. Sahu, K. Ong, R. Jhala. Submitted to ICSE 2025.
2. *Exploring the Effectiveness of LLM based Test-driven Interactive Code Generation: User Study and Empirical Evaluation* – Sarah Fakhoury[*], Aaditya Naik[*], **Georgios Sakkas**[*], Saikat Chakraborty, Madan Musuvathi, Shuvendu K Lahiri ([*]equal contribution). International Conf. on Software Engineering: Companion Proceedings (ICSE) 2024. 📄
3. *Seq2Parse: Neurosymbolic Parse Error Repair* – **Georgios Sakkas**, Madeline Endres, Philip J. Guo, Westley Weimer, and Ranjit Jhala. Proceedings of the ACM on Programming Languages 6, Article 167 (OOPSLA) 2022. 📄
4. *Interactive Code Generation via Test-Driven User-Intent Formalization* – Shuvendu K Lahiri[*], Aaditya Naik[*], **Georgios Sakkas**[*], Piali Choudhury, Curtis von Veh, Madanlal Musuvathi, Jeevana Priya Inala, Chenglong Wang and Jianfeng Gao ([*]equal contribution). arXiv preprint Aug. 2022. 📄
5. *Type Error Feedback via Analytic Program Repair* – **Georgios Sakkas**, Madeline Endres, Benjamin Cosman, Westley Weimer and Ranjit Jhala. Programming Languages Design and Implementation (PLDI) 2020. 📄
6. *PABLO: Helping Novices Debug Python Code Through Data-Driven Fault Localization* – Benjamin Cosman, Madeline Endres, **Georgios Sakkas**, Leon Medvinsky, Yao-Yuan Yang, Ranjit Jhala, Kamalika Chaudhuri and Westley Weimer. Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium 2020. 📄

7. ***InFix: Automatically Repairing Novice Program Inputs*** – Madeline Endres, **Georgios Sakkas**, Benjamin Cosman, Ranjit Jhala and Westley Weimer. Automated Software Engineering (ASE) 2019. 📄

8. ***AIRMS: A Risk Management Tool using Machine Learning*** – Spyros K. Chandrinos, **Georgios Sakkas** and Nikos D. Lagaros. Journal of Expert Systems with Applications, Volume 105, 1 September 2018.

ACADEMIC SERVICE

	PhD Application Mentoring Program
2023 - Present	- PhD application review, feedback & guidance for prospective students
	UC San Diego
2020 - Present	- *Teaching Assistant (TA):*
	• *CSE130 (Undergrad. Programming Languages) – Spring & Winter 2024, Winter 2021, Winter 2020*
	• *CSE230 (Grad. Programming Languages) – Fall 2023, Fall 2021*
2021 - 2022	- *CSE Diversity, Equity, and Inclusion (DEI) Committee* PhD application reviewer
2021	- *CSE Research Virtual Open House* poster presentation
2020 - 2023	- *PhD Visit Days* participation
	Conference Service
2018	- *SPAWC 2018* volunteer

EDUCATION

Sep. 2018 - Present	**UC San Diego, U.S.A.**	(GPA: 3.96/4.0)
	- *PhD Candidate & Master's* in Computer Science & Engineering	
	- *(Ongoing) Thesis:* Neurosymbolic Program Repair	
Oct. 2012 - Jul. 2018	**National Technical University of Athens, Greece**	(GPA: 9.18/10)
	- *Diploma* in Electrical & Computer Engineering (5-year joint degree)	
	- *Bachelor & Master's Equivalent* – Top 2% of class – Awarded "Excellent" degree status	
	- Major (6th - 10th Semesters): Computer Science	(GPA: 9.52/10)
2009 - 2012	**4th Lyceum of Kalamata, Greece**	(GPA: 19.4/20)
	- *Apolytirion* - Valedictorian of class – Graduated with "Prefecture Distinction"	
	- Top 1% in National University Entrance Exams	(Grade: 19,312/20,000)

AWARDS & DISTICTIONS

- **Top 5% & top 10% globally** in IEEE's 24-hour programming contest IEEEXtreme 11.0 & IEEEXtreme 10.0 respectively (October 2017 & October 2016).
- Joint **1st place** in EESTech Challenge (Local Round) on Machine Learning algorithms (April 2017).
- **16th (top 1%)** at the 3rd & final round of Greek National Programming Competition (2011-2012).
- Semi-finalist in Googles Code Jam 2016 & 2017 programming competition.
- Finalist at Greek Mathematics competition for 3 consecutive years and Greek Physics competition (2010-2012).
- Participation with fellow classmates in Google's Hash Code 2016 & 2017 programming competition.
- Finalist team in the "Business Talents" management and decisions contest (2013).

SKILLS

Programming Languages	*Excellent knowledge:* Python, Haskell, JavaScript, C, C++, Java, Go, OCaml, Bash
	Working experience: Prolog, Matlab, Fortran, PHP, MySQL, Assembly languages (80x86)
Languages	Greek (native), English (level C2, TOEFL – 104/120), German (level B2), Japanese (Beginner)
Interests	Drawing & Oil painting, Basketball, Photography & Videography, Science fiction literature