

Georgios Sakkas

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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*, that leverages static analysis, synthesis algorithms and state-of-the-art LLMs (Codex, InCoder 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

- Paid 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 teams & customers

PUBLICATIONS

1. “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. [📄](#) [🌐](#)
2. “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 (Updated version submitted to ICSE 2023). [📄](#)
3. “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. [📄](#) [🌐](#)
4. “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. [📄](#)
5. “InFix: Automatically Repairing Novice Program Inputs”. Madeline Endres, **Georgios Sakkas**, Benjamin Cosman, Ranjit Jhala and Westley Weimer. Automated Software Engineering (ASE) 2019. [📄](#)
6. “AIRMS: A Risk Management Tool using Machine Learning”. Spyros K. Chandrinou, **Georgios Sakkas** and Nikos D. Lagaros. Journal of Expert Systems with Applications, Volume 105, 1 September 2018.

EDUCATION

Sep. 2018 - Present	UC San Diego, U.S.A. – <i>PhD Candidate</i> in Computer Science & Engineering – (<i>Ongoing</i>) <i>Thesis</i> : Neurosymbolic Program Repair	(GPA: 3.96/4.0)
Oct. 2012 - Jul. 2018	National Technical University of Athens, Greece – <i>Diploma</i> in Electrical & Computer Engineering (5-year joint degree; 300 ECTS) – <i>Bachelor & Master Equivalent</i> - GPA: Excellent - Top 2% of class – Major (6th - 10th Semesters): Computer Science	(GPA: 9.18/10) (GPA: 9.52/10)
2009 - 2012	4th Lyceum of Kalamata, Greece – <i>Apolytirion</i> - Valedictorian of class - Graduated with “Prefecture Distinction” – Top 1% in National University Entrance Exams	(GPA: 19.4/20) (Grade: 19,312/20,000)

ACADEMIC RESEARCH EXPERIENCE

UC San Diego, U.S.A.

Sep. 2018 - Present

- *Advisor*: Professor Ranjit Jhala
- *PhD Candidate in Programming Systems group*
- *Focus*: Neurosymbolic (Automated) 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

- *Supervisor*: Associate professor Nikolaos S. Papaspyrou
- *Research Assistant in Software Engineering Laboratory (Softlab)*
- *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

- *Supervisor*: Assistant Professor Maryam Dehnavi (ParaMathics group)
- 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

ACADEMIC SERVICE

PhD Application Mentoring Program

2023 - Present – PhD application review, feedback & guidance

UC San Diego

2020 - Present – *Teaching Assistant (TA)*:

- *CSE230 (Grad. Programming Languages) - Fall 2023, Fall 2021*
- *CSE130 (Undergrad. Programming Languages) - Winter 2021, Winter 2020*

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

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 Basketball, Oil painting, Photography & Videography, Science fiction literature