Charalambos Mitropoulos

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Research Interests

My research interests lie in the area of smart contracts, program analysis, and software testing.

Education

PhD in Computer Science – Technical University of Crete *Sept 2020 – Today*
Supervisor: Prof. S. Ioannidis
Indicative courses and grades:

- Advanced Computer Architecture: 10/10
- Computer and Systems Security: 7/10

MSc in Information Systems – Athens University of Economics and Business *Sept 2017 – May 2019*
GPA: 8/10
Thesis: Employing Different Program Analysis Methods to Study Bug Evolution
Supervisor: Prof. D. Spinellis
Indicative courses and grades:

- Software Reliability and Quality Assurance: 8/10
- Computer Security: 8/10
- Cryptography: 9/10

BSc in Informatics and Telecommunications – National and Kapodistrian University of Athens *Sept 2011 – Sept 2017*
GPA: 7/10
Thesis: Local Search for Optimization Problems
Supervisor: Prof. V. Zissimopoulos
Indicative courses and grades:

- Operating Systems: 8/10
- Algorithms and Complexity: 8/10
- Systems Programming: 7/10

High School Diploma *Sept 2011*
GPA: 18.5/20

Awards and Scholarships

Alpha Bank's Scholarship for First-Year Students *2012-2013*
A scholarship provided by the bank to students who have GPA above 7.5/10

SIGSOFT CAPS *August 2019*
Student Travel Support and Childcare Assistance at Conferences. The grant was given by the organizing committee of the ESEC/FSE '19.

Experience

Research Associate *January 2019 – Today*
Business Analytics Lab (Balab ↗), Athens University of Economics and Business
Research on software security and testing

Web Development, IT support *June 2016 – Today*
Development and support of the Dikotylon ↗ website.
Technologies: HTML, JavaScript

Researcher at Foundation of Research and Technology-Hellas *August 2020 – December*

Participated in European funded programmes :   *2021*
- ASCAPE
- SPIDER 5G CYBER RANGE

Researcher at Technical University of Crete   *December 2021 - Now*
Participated in European funded programmes :
- CyberSecPro
- Sentinel
- SecOpera
- Cybersecdome

Publications

- **Charalambos Mitropoulos**, Maria Kechagia, Chrysostomos Maschas, Sotiris Ioannidis, Federica Sarro, and Dimitris Mitropoulos. Broken agreement: The evolution of Solidity error handling ↗. *In Proceedings of the 18th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM '24).* Pages 257 - 268. October 2024.
- **Charalambos Mitropoulos**, Thodoris Sotiropoulos, Sotiris Ioannidis, Dimitris Mitropoulos. Syntax-Aware Mutation for Testing the Solidity Compiler ↗. *In Proceedings of the 28th European Symposium on Research in Computer Security (ESORICS '23).* Pages 327–347. Springer. September 2023.
- Stefanos Chaliasos, Thodoris Sotiropoulos, Georgios-Petros Drosos, **Charalambos Mitropoulos**, Dimitris Mitropoulos, and Diomidis Spinellis. Well-typed programs can go wrong: a study of typing-related bugs in JVM compilers ↗. *In Proceedings of the ACM on Programming Languages, Volume 5, Issue OOPSLA (part of SPLASH 2021).* Article No. 123. Pages 1-30. October 2021.
- **Charalambos Mitropoulos**, "Employing Different Program Analysis Methods to Study Bug Evolution" ↗. *In Proceedings of the 2018 26th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE '19): Student Research Competition (SRC) Track.* 2019. August 2019. Pages 1202–1204.

PC Member

- 2025: ISSTA (Artifact Evaluation Committee)

Teaching Assistant

Computer Security: Computer Security. Technical University of Crete. BSc Course 5th semester. 2022-Today.

Talks

- **Seminar Presentation @AUEB's BALAB (2023):** Syntax-Aware Mutation for Testing the Solidity Compiler
- **PL-Seminar @National Technical University of Athens, Software Engineering Laboratory (2023):** Syntax-Aware Mutation for Testing the Solidity Compiler
- **Seminar Presentation @AUEB's BALAB (2024):** Broken Agreement: The Evolution of Solidity Error Handling

Personal Projects

Testing the Solidity Compiler:
Fuzzing the Solidity (an object-oriented programming language for writing smart contracts) compiler with AFL (American Fuzzy Lop). Notably, the upstream developers have provided instant bug-fixes releases after approving my patches. Some of these patches are the following:
- ICE on missing modifier identifier 7550 ↗
- ICE on array index with ABIEncoderV2 7549 ↗
- ICE when assigning to calldata structs and static arrays using using inline assembly + FixedPointType not Implemented error 11680 ↗
- ICE in CompilerUtils::convertType when converting a calldata slice of bytes or string 11677 ↗

Technical Skills

Programming Languages: C, C++, Java, SQL, Python, PHP, Prolog, Scala, HTML, JavaScript, Bash scripting

Tools and Editors: Tools and Editors: Vim, IntelliJ, Eclipse, Netbeans, Hadoop, MySQL, MySQL Workbench

Documentation and Preparation Systems: LaTeX, Word, Excel, Powerpoint

Foreign Languages

English: Certificate of Proficiency in English, University of Michigan.

German: Goethe – Zertificat A