SOFIA REIS

PERSONAL INFORMATION

email sofia.o.reis@tecnico.ulisboa.pt
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social media

EDUCATION

PhD in Computer Science and Engineering

2018–2023 Instituto Superior Técnico, University of Lisbon, PT
GPA: 19.4/20 · PhD proposal defended · Graduation: *Nov*, 2023
Thesis: *Understanding and Improving Static Application Security Testing Techniques*
Advisor: Prof. Rui Abreu · rui@computer.org · FEUP, Porto
Co-Advisor: Prof. João Ferreira · joao@joaoff.com · Técnico, Lisbon

ERASMUS+ PROGRAMME

2016–2017 Leiden Institute of Advanced Computer Science, NL
GPA: 7.5/10 · *Computer Science and Advanced Data Analytics*
Data Mining, Social Network Analysis, Big Data and Evolutionary Algorithms
Ref: Prof. Rosaldo Rossetti · rossetti@fe.up.pt

BSc+MSc (Integrated Master)

2012–2017 Faculty of Engineering of the University of Porto, PT
GPA: 15/20 · *Informatics and Computing Engineering* (*A3ES accreditation*)
Thesis: Assessing software vulnerabilities using Naturally Occurring Defects
Mark: 19/20 - top 5% of the best thesis in the class of 2017
Advisor: Prof. Rui Abreu · rui@computer.org

TECHNOLOGIES

Languages Python, Java, C/C++, Bash, JavaScript, Objective-C, OCaml

APIs/Libraries Pandas, Numpy, Matplotlib, SciPY, scikit-learn, NLTK, GitHub API, Tensorflow, RESTful, React

WORK EXPERIENCE

Entrepreneurship

now Founder @coders.school.pt — Douro Valley, PT
Coding school for kids, teenagers and adults in Douro Valley. We want to change the way kids and teenagers use technology: from consumers to producers; and, help adults join the technology community.

Industry

2022 PhD Software Engineer Intern, Facebook/Meta — London, UK
Added taint analysis for data leaks detection in iOS (Objective-C). · Technologies: OCaml, Pulse, Taint Analysis · Ref: Dulma Churchill

2021 PhD Software Engineer Intern, Facebook/Meta — London, UK
Added cost analysis support for C/C++ by implementing models for some C++ standard library functions to catch potential complexity increases in Meta's codebase. The models implemented fixed ~1.2k over-approximations and detected ~3.4k new execution complexity increases for 3 of Meta's C++ projects. In 10 days, C/C++ cost analysis detected ~300 complexity increases for Meta's diffs. · Technologies: OCaml, Abstract Interpretation, InferBo, Cost · Ref: Ezgi Çiçek

2017–2018 RPA Developer, KPMG — Porto, PT
Robotic Process Automation Developer. Responsible for designing and delivering automations in Automation Anywhere (AA) for VAT processing in the pharmaceutical sector.
Technologies: Automation Anywhere and JavaScript · Ref: Lara Conceição and Daniel Pires

Research

2019–*now* PhD Student/Researcher, TÉCNICO/INESC-ID — Lisbon, PT
Performing research on static analysis optimization to improve software security and productivity. Funded by the Portuguese NSF (4 years). This research is performed in parallel with a project funded by the Carnegie Mellon University: *SecurityAware: Fine-grained approach to detect and patch vulnerabilities*. The project aims to develop a novel framework to efficiently detect security issues through the implementation of more fine-grained approaches to CI static analysis. · Ref: Rui Abreu · rui@computer.org

2018–2019 Junior Researcher, INESC-ID — Lisbon, PT
Analysis of the entire corpus of documents published in the last 30 years in the Portuguese law search engine. Funded by the Portuguese Government. Technologies: Python, Grafana, SQL, Pandas, NLTK
Ref: José Borbinha · jlb@tecnico.ulisboa.pt

Teaching Assistant

March, 2023 · Secure Software Engineering - Aplication Security Testing · 1 class. Faculty of Engineering of the University of Porto & Faculty of Sciences of the University of Porto · Ref: Rui Abreu

Spring, 2021 · Software Engineering - Post-Graduation · 3-month course. Everis & Fidelidade. Instituto Superior Técnico, University of Lisbon · Ref: José Tribolet · jose.tribolet@tecnico.ulisboa.pt

Winter, 19/20 · Software Engineering - Post-Graduation · 3-month course. AskBlue & Deloitte. Instituto Superior Técnico, University of Lisbon · Ref: António Silva · rito.silva@tecnico.ulisboa.pt

July, 2019 · Future of Computing · 1-day training on the Fundamentals of accelerated computing with CUDA Python. Certified by NVIDIA. Ref: Cristiana Dinea · cdinea@nvidia.com

Spring, 2019 · Software Engineering - 3rd year course · Full 6-month course. Instituto Superior Técnico, University of Lisbon. · Ref: Rui Abreu · rui@computer.org · 8.62 out of 9

Fall, 2018 · Foundations of Programming - 1st year course · Full 6-month course. Instituto Superior Técnico, University of Lisbon. · Ref: Alberto Abad · alberto.abad@tecnico.ulisboa.pt · 9 out of 9

PUBLICATIONS

Under Review

Sofia Reis, Hakan Erdogmus, Rui Abreu and Corina Păsăreanu. **Best Practices when Writing Security Commit Messages: Are we there yet?**. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) · Conference Paper

Sofia Reis, Corina Păsăreanu, Hakan Erdogmus, Rui Abreu. **SECOMlint: A linter for Security Commit Messages**. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) · Conference Paper - Tool Demo

Sofia Reis and Rui Abreu. **A Systematic Literature Review of Static Application Security Testing Tools**. ACM Computing Surveys (CSUR) · Journal Paper · Major Revision

Accepted

Sofia Reis, Rui Abreu and Corina Păsăreanu. 2022. **Are security commit messages informative? Not enough!**. *International Conference on Evaluation and Assessment in Software Engineering (EASE) - Industry Track* (EASE) · To Appear. · Conference Paper · Core: A

Published

Sofia Reis, Rui Abreu, Marcelo d'Amorim, Daniel Fortunato. 2022. **Leveraging Practitioners' Feedback to Improve a Security Linter**. *Automated Software Engineering - Research Track* (ASE) · To Appear. · Conference Paper · Core: A*

Sofia Reis, Rui Abreu, Hakan Erdogmus, Corina Păsăreanu. 2022. **SECOM: Towards a convention for security commit messages**. *Mining Software Repositories - Industry Track* (MSR) co-located with ICSE. · To Appear. · Conference Paper · Core: A · FOSS award winner 🏆

Sofia Reis, Rui Abreu and Luis Cruz. **Fixing Vulnerabilities Potentially Hinders Maintainability**. *Empirical Software Engineering* (EMSE) · DOI: 10.1007/s10664-021-10019-z · Journal Paper · Core: Q1 (Presented at the ICSME'21 Journal-first track).

David Coimbra, **Sofia Reis**, Rui Abreu, Corina Păsăreanu and Hakan Erdogmus. 2021. **On using distributed representations of source code for the detection of C security vulnerabilities**. International Workshop on Principles of Diagnosis (DX) · Workshop Paper · Core: B

Sofia Reis and Rui Abreu. 2021. **A ground-truth dataset of real security patches**. arXiv:2110.09635 · Currently being used to train an NLP model to detect security commit messages. It will be extended soon.

Sofia Reis, Rui Abreu and Marcelo D'Amorim. 2019. **Demystifying the Combination of Dynamic Slicing and Spectrum-based Fault Localization**. International Joint Conference on Artificial Intelligence (IJCAI) · DOI: 10.24963/ijcai.2019/661 · Conference Paper · Core: A* · 17.8% (850/4752)

Sofia Reis and Rui Abreu. 2017. **SECBENCH: A Database of Real Security Vulnerabilities**. Secure Software Eng. in DevOps and Agile Development (SecSE), co-located with ESORICS · Workshop Paper

Sofia Reis and Rui Abreu. 2017. **Using Github to Create a Dataset of Natural Occurring Vulnerabilities**. International Workshop on Principles of Diagnosis (DX) · Abstract and Poster · Core: B

HONORS, AWARDS AND GRANTS

Honors/Awards

2022 · 🏆 FOSS (Free, Open Source Software) Impact Paper Award (awarded by the International Conference on Mining Software Repositories to outstanding contributions to the FOSS community)
2020 · 🏆 Quantum Excellence in Qiskit Global Summer of School awarded by IBM Quantum. Mark: 100%/100% (a total of 9 labs completed)
2020 · 🏆 Excellence in Teaching the Foundations of Programming awarded by Instituto Superior Técnico, University of Lisbon (excellence was awarded by the students).
2020 · IBM Quantum Challenge Advanced Badge (196/1745). Finished last challenge (required score: 1600/my score: 147/winner score: 45)

Grants

2019 · PhD Scholarship awarded by the Portuguese NSF, cf. `SFRH/BD/143319/2019` · 4 years

Speaking Engagements

2023 · 🔗 "'Making Software More Secure and Security Engineers' Lives Easier"' at Eric Bodden's Research Group (Paderborn University, Germany)
2022 · 🔗 "'Leveraging Practitioners' Feedback to Improve a Security Linter"' at the International Conference on Automated Software Engineering (ASE'22), Virtual
2022 · 🔗 "'SECOM: Towards a convention for security commit messages"' at the International Conference on Mining Software Repositories (MSR'22), Virtual
2021 · 🔗 "'SECOM: Towards a convention for security commit messages"' at the Open Source Security Foundation (OpenSSF), Best Practices and Vulnerability Disclosure Working Groups, Virtual
2021 · 🔗 "'Fixing Vulnerabilities Potentially Hinders Maintainability"' at the International Conference on Software Maintenance and Evolution (ICSME'21), J1 Track, Virtual
2021 · 🔗 "'Classifying and Prioritizing Facebook Infer's Warnings"' at the ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'21), Virtual
2018 · 🔗 Poster at PhD OpenDays 2018, Lisbon, PT
2017 · 🔗 Poster at International Workshop on Principles of Diagnosis, Bréscia, IT

COMMUNITY SERVICES

Program Committee

2023 · Junior PC at the International Conference on Mining Software Repositories (MSR)
2022 · Datasets and Benchmarks Track. Int. Conf. on Neural Information Processing Systems (NeurIPs)
2022 · Artifact Track. ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)
2022 · Artifact Track. Int. Symposium on Software Testing and Analysis (ISSTA).
2021 · Main Track (Shadow PC). Int. Conf. in Mining Software Repositories (MSR).

Sub-Reviewer

2021 · ICST, IEEE Int. Conference on Software Testing, Verification and Validation (Technical Track)

2021 · ICSE, Int. Conference on Software Engineering (Main Track)

2020 · EMSE, Empirical Software Engineering Journal

2019 · JSS, Journal of Systems and Software

Organizing Committee

now · ICSE'24—Co-Web Chair. International Conference in Software Engineering.

2022 · ICST'22—Social Media Chair. Int. Conf. on Software Testing, Verification and Validation.

2020–2021 · Quantum Computing Talks (QCtalks)—Marketing materials and YouTube channel. · 2-years

2019–2020 · ICST'20—Local Organization Chair. Int. Conf. on Software Testing, Verification and Validation. Responsible for finding sponsors and marketing the event on Social Media. · 1-year

2018–2020 · CommitPorto—Tech conference annually organized by AlumniEI-FEUP · Responsible for all the marketing material. Leading the 2020 event in all fronts: marketing, sponsorship and agenda · 3 years

Student Volunteer

2021 · IEEE International Conference on Software Engineering (ICSE'21), Virtual · 1-week

2020 · IEEE Int. Conference on Software Testing, Verification and Validation (ICST'20), Virtual · 1-week

2019 · Future of Computing Conference, Porto, PT · 1-week

2019 · ACM Symposium on Principles of Programming Languages (POPL'19), Lisbon, PT · 1-week

2018 · Int. Conference on Software Quality, Reliability and Security (QRS'18), Lisbon, PT · 3-days

June 16, 2023