

# SOFIA REIS


## PERSONAL INFORMATION

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social media  ·  · 

## EDUCATION

*PhD in  
Computer Science  
and Engineering*  
**2018–2022** Instituto Superior Técnico, University of Lisbon, PT  
GPA: 19.4/20 · Waiting for PhD proposal defense · Graduation: Feb, 2022  
Thesis: *Understanding and Improving Security-oriented Static Analysis Techniques*  
Advisor: Prof. Rui ABREU · [rui@computer.org](mailto:rui@computer.org) · FEUP, Porto  
Co-Advisor: Prof. João FERREIRA · [joao@joaoff.com](mailto: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](mailto: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](mailto:rui@computer.org)

## TECHNOLOGIES





*Languages* Python, Java, SQL, Redis, C/C++, Bash, HTML, CSS, JavaScript  
*APIs/Libraries* Pandas, Numpy, Matplotlib, SciPY, scikit-learn, NLTK, GitHub API, RESTful, Qiskit, Google Cloud API, D3.js, jQuery, NodeJS

## WORK EXPERIENCE

*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 **CMU Portugal** (*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](mailto: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](mailto:jlb@tecnico.ulisboa.pt)

*Industry*  
**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. **Certified** Developer.  
License: AAADVC-Fv5QqG1J1D · TECHNOLOGIES: Automation Anywhere and JavaScript  
Ref: Lara CONCEIÇÃO and Daniel PIRES

*Teaching Assistant*  
**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](mailto:rito.silva@tecnico.ulisboa.pt)  
**Spring, 2019** · Software Engineering  - 3rd year course · Full 6-month course. Instituto Superior Técnico, University of Lisbon. · Ref: Rui ABREU · [rui@computer.org](mailto: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](mailto:alberto.abad@tecnico.ulisboa.pt) · 9 out of 9 

## PROJECTS

I have developed a few open-source projects in the past years. Smaller projects such as **NAVQDSL** (a DSL for specifying queries in navigation systems graphs developed in Java for the compilers course) and **cf-tool** (a tool using collaborative filtering to recommend videos to a user developed in C/C++). The following projects are the outcome of some of my research (program analysis and security):

*Open-Source*  
**2018–2019** Lithium Slicer (Tool)  
**Lithium Slicer** is a test minimization tool to help developers minimize entire programs guided by specific test oracles. It combines software fault localization and dynamic slicing to improve software fault localization accuracy for Java programs. The approach improved the diagnostic accuracy up to 73.7% (13.4% on average). TECHNOLOGIES: Python, Bash and Java — Research Project (ck. Publication [1])

**2016–2020** SecBench (Dataset + Crawler)  
**SecBench** is a dataset of 676 real security vulnerabilities fixes mined from GitHub repositories to boost tool evaluation since testing tools using mutations might lead to a misleading assessment of the capabilities of the tools. TECHNOLOGIES: Redis, Google Cloud Storage, Github v3 API, Python, HTML, CSS, JavaScript, D3.js, jQuery — Research Project (ck. Publication [4])

## RELEVANT TRAINING

- 2020** · Facebook Testing and Verification Symp. (**FaceTAV'20**), Online (invite only) · 3-days
- 2020** · **Facebook Analytics Academy Challenge**: Virtual challenge for selected students. The challenge involved answering to 5 questions by applying data science methods to a set of data. · October · 24-hour
- 2020** · **Google Get Ahead**: Virtual program for selected CS students from all over EMEA. Technical challenges, YouTube live training and interview workshops. · July-August (invite only) · 8-weeks
- 2020** · 🍷 **Qiskit Summer School**: Virtual summer school on quantum computing by IBM Quantum. Topics went from the basics (qubits, circuits, etc) to simulating chemistry on a quantum computer. Labs only available to 2000 out of the 5000 participants. 9 labs required · July · 2-weeks
- 2020** · Finding security vulnerabilities in **Java** and **JavaScript** with CodeQL Workshops. Two virtual workshops of hands-on vulnerability detection with CodeQL · Online at GitHub Satellite, May · 1-day
- 2019** · 🍷 Facebook Testing and Verification Symp. (**FaceTAV'19**), Facebook London (invite only) · 2-days
- 2019** · 🍷 **Future of Computing** Conference, Porto, PT, July · 1-week
- 2019** · **VMCAI** Summer School, Lisbon, PT, January · 4-days
- 2018** · Facebook Testing and Verification Symp. (**FaceTAV'18**), Facebook London (invite only) · 2-days

## COMMUNITY SERVICES

- Student Volunteer* **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
- 2017** · **Talk a Bit** Conference, Porto, PT — organized by **FEUP** · 1-day
- Program Committee* **2021** · **MSR'21** — Shadow PC committee. Int. conference in Mining Software Repositories. · 3-months
- Sub-Reviewer* **2021** · **ICST'21**, IEEE Int. Conference on Software Testing, Verification and Validation (Technical Track)
- 2021** · **ICSE'21**, 43rd Int. Conference on Software Engineering (Main Track)
- 2020** · **EMSE**, Empirical Software Engineering Journal
- 2019** · **JSS**, Journal of Systems and Software
- Organizing Committee* **2019–2020** · **ICST'20** — Local Organization Chair. Academic Conference in Software Testing. 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

## HONORS, AWARDS AND GRANTS

- Honors* **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* **2018** · 🍷 Poster at PhD OpenDays 2018, Lisbon, PT
- 2017** · 🍷 Poster at International Workshop on Principles of Diagnosis, Bréscia, IT
- Publications (under review)* [\*] Sofia Reis, Rui Abreu and Luis Cruz. **Fixing Vulnerabilities Potentially Hinders Maintainability**. Empirical Software Engineering (**EMSE**) · *Journal Paper* · Core: Q1
- [\*] Sofia Reis and Rui Abreu. **A Systematic Literature Review and Taxonomy for Security-oriented Static Analysis Tools**. ACM Computing Surveys (**CSUR**) · *Journal Paper* · Core: Q1
- Publications* [1] 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**) · *Conference Paper* · Core: A\* · 17.8% (850/4752)
- [2] Sofia Reis. 2018. **Leveraging Known Vulnerabilities to Modernize Static Analysis Tools**. PhD OpenDays 2018. Lisbon, Portugal · *Poster*
- [3] Sofia Reis and Rui Abreu. 2017. **A Database of Existing Vulnerabilities to Enable Controlled Testing Studies**. International Journal of Secure Software Engineering (**IJSSE**) 8 (3): 1-23 · *Journal Paper* - Invited Paper Extension
- [4] Sofia Reis and Rui Abreu. 2017. **SECBENCH: A Database of Real Security Vulnerabilities**. Secure Software Engineering in DevOps and Agile Development (**SecSE**), co-located with **ESORICS** · *Workshop Paper*
- [5] 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

January 25, 2021