Academic Curriculum Vitae

Personal Information

Name Moritz Mock

Education

Free University Bozen-Bolzano *November 2023 - today*
Ph.D. in Advanced-Systems Engineering *Bozen-Bolzano, IT*
Project: Intelligent systems for cyber risk mitigation in industry (in collaboration with Würth Phoenix[1])
Supervisor: Prof. Barbara Russo

Free University Bozen-Bolzano *October 2021 - March 2023*
Laurea magistrale in Software Engineering for Information Systems *Bozen-Bolzano, IT*
Title: Detection of self-admitted vulnerabilities with machine learning
Supervisor: Prof. Barbara Russo and Dr. Jorge Melegati
Final Grade: 110 cum laude /110

Free University Bozen-Bolzano *October 2019 - July 2021*
Laurea in Computer Science *Bozen-Bolzano, IT*
Title: Exploring developers comments to detect weak code
Supervisor: Prof. Barbara Russo
Final Grade: 85/110
Transferred from the University of Heidelberg

Professional Development

Università degli Studi di Urbino Carlo Bo *August 2024*
23th International School on Foundations of Security Analysis and Design[2] *Bertinoro, IT*

Free University Bozen-Bolzano *July 2023*
9th International School on Software Engineering ISE2023[3] *Bozen-Bolzano, IT*

Free University Bozen-Bolzano *July 2022*
8th International School on Software Engineering ISE2022[4] *Bozen-Bolzano, IT*

Professional Experience

Würth Phoenix *February 2024 - August 2024*
Internship for the PhD *Bozen-Bolzano, IT*

- Enhancing the code quality with static code analysis tools
- Creation of a CI/CD pipeline to foster a continuous testing approach by connecting different sources to detect vulnerabilities in the code
- Gathering knowledge about dynamic testing and attacking software systems
- Technologies used: *GitHub Action*

Free University of Bolzano-Bozen *June 2023 - October 2023*
Commissioned researcher - Supervised by Prof. Barbara Russo *Bozen-Bolzano, IT*

[1] wuerth-phoenix.com
[2] sites.google.com/uniurb.it/fosad/home/fosad-2024
[3] seschool-series.github.io/2023
[4] seschool-series.github.io/2022

- Advancing the understanding of state-of-the-art machine learning tools that detect weak code structures and technical debt in code comments
- Design and implementation of an AI tool for detecting vulnerabilities in low-quality code fragments
- Technologies used: *Python, PyTorch*

AboutBits *July 2022 - September 2022*
Curricular internship in collaboration with the Free University of Bozen-Bolzano *Freienfeld, IT (Remote)*

- Implementation of features in existing client projects
- Technologies used: *Tailwind, React, NextJS*

AboutBits *July 2021 - September 2021*
Internship *Freienfeld, IT (Remote)*

- Implementation of a design library, a client project, and the addition of features in existing client projects
- Technologies used: *Storybook, Tailwind, React, NextJS*

Akademie der Wissenschaften *August 2019 - December 2020*
Contract of Service - Project 'Theologenbriefwechsel' *Heidelberg, DE (Remote)*

- Creation of a comprehensible documentation
- Assisting and training the new developers to better understand the code base

Akademie der Wissenschaften *March 2017 - July 2019*
Undergraduate student assistant - Project 'Theologenbriefwechsel' *Heidelberg, DE*

- Implementation of an application for the management of letter data
- Analysis of the user needs to extract new features and their implementation
- Visualisation of data to extract new pieces of information
- Technologies used: *MongoDB, Express, React, NodeJS, Tomcat*

University of Heidelberg *August 2016 - February 2017*
Undergraduate student assistant - Database and Systems Research Group *Heidelberg, DE*

- Involvement in the planning of the software architecture for the project 'Theologenbriefwechsel'
- Prototyping an application for the project 'Theologenbriefwechsel'
- Technologies used: *MongoDB, ExpressJS, React, NodeJS*

Publications

Moritz Mock, Jorge Melegati, Max Kretschmann, Nicolás E. Díaz Ferreyra, and Barbara Russo. MADE-WIC: Multiple annotated datasets for exploring weaknesses in code. 2024. Accepted for ASE; Tool Demonstrations track. https://doi.org/10.48550/arXiv.2408.05163

Moritz Mock, Jorge Melegati, and Barbara Russo. Generative AI for Test Driven Development: Preliminary Results arxiv.org/abs/2405.10849

Moritz Mock, Thomas Forrer, and Barbara Russo. Where do developers admit their security-related concerns? arxiv.org/abs/2405.10902

Moritz Mock. Utilization of Machine Learning for the Detection of Self-admitted Vulnerabilities. In: Kadgien, R., Jedlitschka, A., Janes, A., Lenarduzzi, V., Li, X. (eds) Product-Focused Software Process Improvement. PROFES 2023. Lecture Notes in Computer Science, vol 14484. Springer, Cham. doi.org/10.1007/978-3-031-49269-3_15

Barbara Russo, Matteo Camilli, and **Moritz Mock**. 2022. WeakSATD: Detecting Weak Self-admitted Technical Debt. In 19th International Conference on Mining Software Repositories (MSR '22), May 23–24, 2022, Pittsburgh, PA, USA. ACM, New York, NY, USA, 6 pages.
dl.acm.org/doi/abs/10.1145/3524842.3528469

Scientific Boards and Conference Organization

International Conference on Agile Software Development - XP'24 *2024*
Volunteering *Bozen-Bolzano, IT*

AI for Agile Software Engineering - AI4ASE - Collocated with XP'24 *2024*
Member of the Program Committee *Bozen-Bolzano, IT*

Mining Software Repositories 2024 - MSR'24 *2024*
Member of the Junior Program Committee *Lisbon, PRT*
2024.msrconf.org/track/msr-2024-junior-pc

Reviewer for Journals

Information and Software Technology - IST *July 2024 3- today*
Reviewed two papers

Non-scientific events

SFSCon 2024 - 21th Edition *November 2024*
Can Test Driven Development be speeded up with Generative AI *Bozen-Bolzano, IT*
Co-Speakers: Jorge Melegati and Barbara Russo
Host: Noi Techpark, Bolzano, Italy
Link:

Software Developer's Thursday *July 2024*
How can we embrace generative AI in collaborative software development? *Bozen-Bolzano, IT*
Co-Speakers: Jorge Melegati and Barbara Russo
Host: Noi Techpark, Bolzano, Italy
Link: noi.bz.it/en/events/software-developer-s-thursday/3cdfee32-d5ec-405c-84eb-edd52c6ba02a

SFSCon 2023 - 20th Edition *November 2023*
Recommending security fixes for weak open-source code with AI *Bozen-Bolzano, IT*
Co-Speakers: Jorge Melegati and Barbara Russo
Host: Noi Techpark, Bolzano, Italy
Link: sfscon.it/talks/recommending-security-fixes-for-weak-open-source-code-with-ai/

Teaching Experience

Free University of Bolzano-Bozen *March 2024 - July 2024*
Teaching Assistant - Operating Systems *Bozen-Bolzano, IT*
Main lecturer: Dr. Andrea Janes
Hours: 20

Free University of Bolzano-Bozen *Mai 2024*
Guest Lecturer for the master class 'Software Maintenance and Evolution' *Bozen-Bolzano, IT*
Invited by: Dr. Jorge Melegati
Title: How to mine software repositories

Free University of Bolzano-Bozen *April 2023*
Guest Lecturer for the master class 'Software Maintenance and Evolution' *Bozen-Bolzano, IT*

Invited by: Dr. Jorge Melegati
Title: How to mine software repositories

Scholarships and Grants

Three-year fully funded Ph.D. scholarship at Free University of Bozen-Bolzano. *2023 - 2026*
Funded by the Ministero dell'Università e della Ricerca and the company Würth Phoenix[1].

Project participation

DLVUL - Leveraging deep learning to detect vulnerabilities of very large datasets of software artefacts *October 2023 - August 2024*
CINECA HPC class C project
Project owner: Prof. Barbara Russo

Prices won

Noi Hackathon - 24 hours *November 2023*

Link: hackathon.bz.it/project/cosmiccarrots

Language Competence[5]

German	Native
English	C1 (Certificate issued by the Language Center of the Free University of Bozen-Bolzano, October 2020)
Italian	B2 (Certificate issued by the Language Center of the Free University of Bozen-Bolzano, March 2021)

Voluntary Activities

Free University Bozen-Bolzano *May 2024 - today*
Student Representative in the PhD Council for Advanced-Systems Engineering *Bozen-Bolzano, IT*

Free University Bozen-Bolzano *May 2022 - March 2023*
Student Representative in the MSc Council for Software Engineering for Information Systems *Bozen-Bolzano, IT*

[5] All the obtained certificates follow the *Common European Framework of Reference for Languages (CEFR)* standart.