

# University Academic Curriculum Vitae

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**Personal information** Diaeddin M A Rimawi  
**Education since leaving school**

- 2014 Bachelor of Computer Science (Birzeit University)
- 2020 MSc of Software Engineering (Birzeit University)
- 2025 PhD of Advanced-Systems Engineering, title – Green Resilient of Cyber-Physical Systems (Free University of Bozen-Bolzano)

**Present appointment**

- Technologist
- January 2025 - Present
- Level of appointment: National-level technical and research support position within an Italian public university
- Employer: Free University of Bozen-Bolzano – Cybersecurity Lab (CSLab)
- I manage the overall activities of the CSLab, including the operation and development of its core platforms such as the Cyber Range, threat intelligence, and vulnerability sharing systems. My role includes contributing to research and funding proposals, advising on cybersecurity technologies, supporting applied research in AI-driven security and OT/IT integration, and assisting in the delivery of cybersecurity teaching labs for master's students.

## Professional experience

Chronological list of all previous employments

From / to	Job title	Name of academic Institution	Academic level	responsibilities
Jan 2022 – May 2025	PhD Researcher	Free University of Bozen-Bolzano	Doctoral researcher	Researched "Green Resilience" in Collaborative AI Systems. Developed optimization and reinforcement learning frameworks balancing greenness and resilience under disruptions. Published findings in top venues and contributed to simulator and real-system evaluations.
Jun 2023 – Dec 2023	Research Intern	Fraunhofer Italia Research	Research internship	Migrated robotic systems to containerized environments. Evaluated decision-making frameworks for resilience and sustainability trade-offs.
Sep 2020 – Aug 2022	University Instructor	Birzeit University	Lecturer (part-time)	Taught Linux, Databases, and Discrete Mathematics. Supervised graduation projects and developed teaching material.
Nov 2020 – Dec 2021	Head of Instructors	AXSOS Academy Gmb	Technical / educational leadership	Led a team of instructors, oversaw curriculum delivery, taught programming stacks (Python, Java, MERN), and developed the internal academy portal.
Jul 2017 – Nov 2020	Software Engineer	ASAL Technologies (partnering with NVIDIA)	Industry-level R&D Engineer	Worked on verification and development in NVIDIA's Mellanox Firmware Tools (MFT) project. Developed features in C/C++ and Python automated test pipelines, and maintained open-source components.
Sep 2014 – Aug	Teaching and	Birzeit University	Junior academic	Delivered labs and assisted in teaching across various

2017	Research Assistant		support role	computer science subjects. Developed instructional material and supported students in multiple foundational and advanced courses. Contributed to a research project focused on addressing uncertainty in adaptive systems by using goal models for requirements engineering. The project re-modeled system requirements as a genetic algorithm optimization problem to explore suitable alternatives, with a case study applied to a smart parking system.
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The following table summarizes selected practice-related projects in which I have actively contributed as part of my professional role. Each entry highlights the project scope, institutional context, my position, and the nature of my contribution.

Project title	Institution / Collaboration	Position	Role / Contribution
Cyber Range Acquisition and Design	Free University of Bozen-Bolzano	Technologist (CSLab)	Lead contributor to the design and procurement of a modular and scalable Cyber Range. Defined technical specifications, ensured alignment with research and teaching needs, and participated in the preparation of the technical evaluation of European tender submissions.
AI for Secure OT Networks	European Digital Innovation Hub (EDIH) – proposal phase	Technologist (CSLab)	Co-authored the project proposal. Defined project milestones focused on applying AI-based intrusion detection and implementing Zero Trust principles in industrial OT networks.
NIS2 Compliance and Threat Modeling Support for Critical Infrastructure	Industrial contract – applied research with public entity	Technologist (CSLab)	Supporting the alignment with NIS2 directive for a critical infrastructure provider. Threat modeling activities, identifying potential attack surfaces, and advising on compliance and cybersecurity measures.

### Experience in academic teaching

Course Title	University / Institute	Subject Area	Academic Level	Years
Systems and Software Security Lab (co-taught)	Free University of Bozen-Bolzano	Cybersecurity, Software Security	Postgraduate	Spring 2025
Linux Operating Systems Lab	Birzeit University	Operating Systems	Undergraduate	Sep 2020–Aug 2022
Discrete Mathematics	Birzeit University	Theoretical CS / Math	Undergraduate	Sep 2020–Aug 2022
Database Management Systems	Birzeit University	Databases	Undergraduate	Sep 2020–Aug 2022
Python Full Stack (Flask, Django)	AXSOS Academy Gmb	Programming / Web Development	Vocational / Bootcamp	Nov 2022 – Dec 2021

Java Full Stack (Spring Boot)	AXSOS Academy Gmb	Programming / Web Development	Vocational / Bootcamp	Nov 2022 – Dec 2021
MERN Stack (MongoDB, Express, React, Node)	AXSOS Academy Gmb	Programming / Web Development	Vocational / Bootcamp	Nov 2022 – Dec 2021
Programming Fundamentals, OOP in Python, and Data Structures	Gaza Sky Geeks	Theoretical CS, Programming, Data Structures	Technical training	Apr 2025 – Aug 2025

### Other academic responsibilities

- Program Committee member for the **MSR4P&S 2026** (The 4th International Workshop on Mining Software Repositories Applications for Privacy and Security).
- Program Committee member within the Posters-track for the **CAIN 2026** (The 5th International Conference on AI Engineering – Software Engineering for AI).
- Program Committee member within Posters and Demos for the **ICSOB 2025** (The 16th International Conference on Software Business).
- Reviewer for the Information and Software Technology (**IST**) journal (2024–2025).
- Reviewer for the **SEAA 2025** (Euromicro Conference on Software Engineering and Advanced Applications).

### Research and scholarships

#### Summary of current research

My current research investigates how cyber-physical and software-intensive systems can be protected from threats and adapted to comply with security regulations while maintaining reliable performance. As part of an applied research team at the Cybersecurity Laboratory (CSLab) at the Free University of Bozen-Bolzano, I focus on:

- Threat modeling and risk assessment methodologies aligned with the NIS2 directive.
- Architectural design and enforcement strategies for Zero Trust in operational and enterprise systems.
- Detecting security attacks in microservices-based architectures by monitoring anomalies in system performance metrics.
- Natural Language Processing (NLP), driven vulnerability detection by exploring the use of Sentence Transformers to predict software vulnerabilities from attack descriptions, further understanding new software vulnerabilities from attacks news.

#### Summary of research and scholarship during the previous five years

During my PhD (2022–2025), I introduced the concept of Green Resilience in Collaborative AI Systems (e.g., collaborative robots), combining sustainability and resilience as dual objectives. My research leveraged reinforcement learning, multi-objective optimization, and game theory to build adaptive decision-making frameworks that balance system recovery and CO<sub>2</sub> minimization after disruptions.

Prior to my doctoral work, I investigated the use of design patterns in Android applications, using model-based and static analysis approaches to detect recurring architectural structures and evaluate code maintainability and reusability. I also contributed to a research project addressing uncertainty in adaptive systems by employing goal models for requirements engineering. In this project, system requirements were re-modeled as a genetic algorithm optimization problem to explore suitable adaptation alternatives, demonstrated through a smart parking system case study.

## Research grants and contracts

Date granted	Award Holder(s)	Funding Body	Title	Amount Received
2022–2024	Diaeddin Rimawi	Italian Ministry of University and Research (MUR)	PON Scholarship for Innovation and Green Studies	€51,000 (approx.)
2025	CSLab (co-author)	European Digital Innovation Hubs (EDIH)	AI-Based Security for OT Networks (Zero Trust CPS)	Not available
2025	CSLab (contributor)	Public sector collaboration	NIS2 Compliance and Threat Modeling for Critical Infrastructure	Not available

## Publications

### Conference Papers

- **Rimawi, D.**, Liotta, A., Todescato, M., and Russo, B. (2024). *Modeling Resilience of Collaborative AI Systems*. In *IEEE/ACM 3rd International Conference on AI Engineering (CAIN 2024)*, pp. 24–29.
- **Rimawi, D.**, Liotta, A., Todescato, M., and Russo, B. (2023). *CAIS-DMA: A Decision-Making Assistant for Collaborative AI Systems*. In *Product-Focused Software Process Improvement (PROFES 2023)*, pp. 183–199. Springer, Cham.
- **Rimawi, D.**, Liotta, A., Todescato, M., and Russo, B. (2023). *GResilience: Trading off Between the Greenness and the Resilience of Collaborative AI Systems*. In *IFIP International Conference on Testing Software and Systems (ICTSS 2023)*, pp. 266–273. Springer, Cham.
- **Rimawi, D.** (2022). *Green Resilience of Cyber-Physical Systems*. In *IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW 2022)*, pp. 105–109.
- **Rimawi, D.** and Zein, S. (2019). *A Model-Based Approach for Android Design Patterns Detection*. In *3rd International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT 2019)*, pp. 1–10. IEEE.

### Journal Articles

- Othman, R., **Rimawi, D.**, Rossi, B., and Russo, B. (2026). *From attack descriptions to vulnerabilities: A sentence transformer-based approach*. *Journal of Systems and Software*. DOI: 10.1016/j.jss.2025.112615.
- **Rimawi, D.**, Liotta, A., Todescato, M., and Russo, B. (2025). *GResilience: Decision-Making Policies for Trading Off Greenness and Resilience in Online Collaborative AI Systems*. *IEEE Access*. DOI: 10.1109/ACCESS.2025.3596836
- **Rimawi, D.** and Zein, S. (2020). *A Static Analysis of Android Source Code for Design Patterns Usage*. *International Journal of Advanced Trends in Computer Science and Engineering*, 9(2), 2178–2186.

### In Preparation

- **Rimawi, D.**, Othman, R., Liotta, A., Todescato, M., and Russo, B. *Toward a Green-Resilient Online Collaborative AI System with Agent-Based Decision-Making*. (Journal article, in preparation)
- Othman, R., **Rimawi, D.**, Rossi, B., and Russo, B. *Predicting Software Vulnerabilities from Attack News Using MPNet Transformer*. (Journal paper, in preparation)

- **Rimawi, D.**, [Co-authors TBD]. *Performance Evaluation of Microservice-Based Applications Under Security Attacks*. (Early-stage design and experiments)

## Skills

I have developed strong technical skills in machine learning, cybersecurity, and software engineering, with a particular focus on reinforcement learning, optimization, and secure system design. My research and development work spans collaborative AI systems, containerized environments, and decision-making under disruption, supported by solid programming proficiency in Python and experience with ROS, automation, and Git. I am also skilled in virtualization, data structures, and full-stack web development, which I have applied both in teaching and in real-world projects involving collaborative robotics and secure software infrastructure.

To complement my academic background, I have completed several online certifications covering artificial intelligence, IoT fundamentals, digital twins, project management, and effective leadership. These have strengthened my ability to work across interdisciplinary teams and apply my technical expertise to design practical, scalable, and sustainable AI-driven systems.

## Statement of interest

My doctoral work at the Free University of Bozen-Bolzano, supervised by Prof. Antonio Liotta and Prof. Barbara Russo, centered on the development of decision-making models for the online continual learning process of Collaborative AI Systems (e.g., collaborative robots) operating under performance degradation caused by disruptive events.

In my PhD research, I formalized the notion of Green Resilience and developed frameworks that examine reinforcement learning model, a multi-objective optimization model, and a game theory model to guide recovery policies in cyber-physical environments. These frameworks were evaluated in both simulation and physical robotic systems to support adaptive control. To ensure effective decision-making over time, we explored strategies to maintain a memory of stable system states. This included techniques such as exponential smoothing for optimization and game-theoretic policies, and reward function design in reinforcement learning agents. These elements helped balance short-term performance gains with long-term system resilience and sustainability.

During my PhD, I also completed a deep learning course and implemented a full object detection pipeline on a custom-labeled dataset for detecting object shapes and colors in real-world images. This hands-on experience with convolutional architectures, dataset creation, and vision-based annotation workflows contributes to my readiness to support the computer vision and multimodal learning aspects of the project. In my current role as a technologist at the Cybersecurity Lab (CSLab), I am engaged in applied research involving anomaly detection in microservice architectures, risk modeling, and performance monitoring.

I have also gained solid academic teaching experience, having taught several undergraduate courses at Birzeit University, including Linux Operating Systems, Discrete Mathematics, Data Structures, and Database Management Systems. These subjects intersect naturally with the foundational skills required for courses such as Artificial Intelligence and Machine Learning, Computer Vision, Deep Learning, and Process Mining offered by the project supervisors. I am confident in my ability to contribute to teaching activities within the allocated 60-hour load, including undergraduate, master's, and PhD-level courses aligned with the research focus of this position.

I am strongly motivated to contribute to the advertised position within the D2PAM project, which focuses on combining data-driven learning and symbolic process mining for activity understanding from

multimodal streams. I believe that my interdisciplinary research profile, spanning continual learning, reinforcement learning, deep learning, and secure system engineering, positions me well to contribute meaningfully to the project's scientific goals and to the university's broader mission.

### Language competence

Language	Understanding (Listening / Reading)	Spoken Interaction	Spoken Production	Writing	Certificate / Evidence
Arabic	C2 / C2	C2	C2	C2	Native speaker
English	C1 / C1	C1	C1	C1	English C1
Italian	A1.2 / A1.2	A1.2	A1.2	A1.2	Self-assessed (based on coursework and interaction)

### Certificates

- **English Language Certificate – Level C1**
  - Issued by the Free University of Bozen-Bolzano (2024)
  - Link: <https://bestr.it/award/show/h9cY7kR4Qai0WFCJFw9tqg>
- **Privacy in Research – GDPR Training**
  - Issued by the Free University of Bozen-Bolzano (2024)
  - Link: <https://bestr.it/award/show/aMpw1hy-RqGATPvJmFx9pQ>