

EUROPEAN
CURRICULUM VITAE
FORMAT



PERSONAL INFORMATION

Name **MUSA ALBERTO**
A [REDACTED]
Telephone [REDACTED]
E-mail [REDACTED]
Nationality [REDACTED]
Date of birth [REDACTED]

WORK EXPERIENCE

- Dates (from – to) **1ST NOVEMBER 2022 – PRESENT**
- Name and address of employer **ALMA MATER STUDIORUM - Università di Bologna - Via Zamboni, 33 – 40126, Bologna, Italy**
- Type of business or sector **Public**
- Occupation or position held **PhD Student**
- Main activities and responsibilities **Development of a secure software stack for RISC-V-based SoCs combining CVA6 and OpenTitan. Activities include firmware development in C for cryptographic acceleration, Linux driver programming, FPGA-based testing, and hardware/software co-design. Involved in the design of secure communication protocols, OpenSSL integration, and memory protection mechanisms. Collaborated on Control Flow Integrity validation within the RISC-V platform. Concurrent activity as academic tutor, supporting students in project development and technical problem solving. Key skills: embedded C programming, firmware development, FPGA prototyping (VCU118), RISC-V and OpenTitan internals, cybersecurity for embedded systems, Linux kernel integration, collaborative research workflows, task coordination, and technical mentoring**

- Dates (from – to) **30TH SEPTEMBER 2021 – 31ST OCTOBER 2022**
- Name and address of employer **ALMA MATER STUDIORUM - Università di Bologna - Via Zamboni, 33 – 40126, Bologna, Italy**
- Type of business or sector **Public**
- Occupation or position held **Research fellow**
- Main activities and responsibilities **Research on autonomous Cyber-Physical Systems, with a focus on UAVs applied to Reinforcement Learning; activities include state-of-the-art analysis, Python software development, use of simulation tools (e.g., AirSim) and server infrastructures, basic knowledge of UAV components and software stacks, RL techniques, teamwork in research environments, and contribution to scientific publications.**

EDUCATION AND TRAINING

- Dates (from – to) **22ND SEPTEMBER 2016 – 22ND JULY 2021**
- Name and type of organisation providing education and training **Università degli Studi di Cagliari**
- Principal subjects/occupational skills covered **Computer Science - Developed an IoT infrastructure for construction site monitoring as part of the Master's thesis, focusing on embedded systems and real-time data management; completed a 6-month Erasmus program at the University of Freiburg (DE), working on IoT and embedded systems projects.**
- Title of qualification awarded **Dott./Mag. - Laurea Magistrale in Informatica (LM-18, D.M. 270/2004)**
- Level in national classification **106/110**

(if appropriate)

- Dates (from – to)
- Name and type of organisation providing education and training
- Principal subjects/occupational skills covered
 - Title of qualification awarded
- Level in national classification (if appropriate)

16TH SEPTEMBER 2013 – 22ND SEPTEMBER 2016

Università degli Studi di Cagliari

Computer Science

Dott. - Laurea in Informatica (L-31, D.M.270/2004)

106/110

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE

ITALIAN

OTHER LANGUAGES

Self-assessment
European level (*)

ENGLISH

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
B2	Independent User	B2	Independent User	B2	Independent User	B1	Independent User	B2	Independent User

SOCIAL SKILLS AND COMPETENCES

Gained through international experiences, including research grant and conference participation, enabling collaboration with people from diverse cultures and adapting to new environments. These opportunities strengthened adaptability, communication, and teamwork skills, further enhanced by research projects, internships, and team sports.

ORGANISATIONAL SKILLS AND COMPETENCES

Developed through managing academic projects and professional tasks, coordinating research activities, and ensuring the timely completion of deliverables. Experience in working with multidisciplinary teams and managing complex tasks enhanced leadership and organizational skills. These experiences also strengthened the ability to work under pressure, meet tight deadlines, and maintain a high level of coordination in collaborative environments.

TECHNICAL SKILLS AND COMPETENCES.

Proficient in low-level programming and firmware development, with experience in embedded systems and IoT. Skilled in cryptographic algorithms and benchmarking, as well as FPGA prototyping and RTL simulation. Experienced with operating systems (Linux, Windows), programming languages (Python, C, Java), development environments (IDEs), and version control (Git, GitHub). Knowledgeable in CPS simulation (HiL, SiL), UAV software stacks, and server infrastructure management. Basic understanding of Reinforcement Learning. This combination of skills is reinforced by hands-on project work and exposure to real-world technologies in security, embedded systems, and CPS development.

DRIVING LICENCE(S)

B

ADDITIONAL INFORMATION

PUBLICATIONS

Musa, A., Volante, F., Parisi, E., Barbierato, L., ... & Barchi, F. (2024). «TitanSSL: Towards Accelerating OpenSSL in a Full RISC-V Architecture Using OpenTitan Root-of-Trust». *SafeComp 2024*.

Musa, A., Parisi, E., Barbierato, L., Acquaviva, A., Barchi, F. (2024) «End-to-end Integration of OpenTitan Security Features in a Pure RISC-V SoC». *SMACD 2024*

Parisi, E., **Musa, A.**, Manoni, S., Ciani, M., Rossi, D., Barchi, F., Bartolini, A., Acquaviva, A. (2024, March). «TitanCFI: Toward Enforcing Control-Flow Integrity in the Root-of-Trust.» In *2024 Design, Automation & Test in Europe Conference & Exhibition (DATE)* (pp. 1-6). IEEE.

Parisi, E., **Musa, A.**, Ciani, M., Barchi, F., Rossi, D., Bartolini, A., & Acquaviva, A. (2024, May). «Assessing the Performance of OpenTitan as Cryptographic Accelerator in Secure Open-Hardware System-on-Chips». In Proceedings of the 21st ACM International Conference on Computing Frontiers (pp. 172-179).

Ciani, M., Parisi, E., **Musa, A.**, Barchi, F., Bartolini, A., Kulmala, A., ... & Rossi, D. (2024). «Unleashing OpenTitan's Potential: a Silicon-Ready Embedded Secure Element for Root of Trust and Cryptographic Offloading.» arXiv preprint arXiv:2406.11558.

Musa, A., Zanatta, L., Barchi, F., Andrea, B., & Andrea, A. (2022). A method for accelerated simulations of reinforcement learning tasks of uavs in airsims. In SIMUL 2022, The Fourteenth International Conference on Advances in System Simulation (pp. 46-53). Frank Herrmann.

DATA, 29/05/2025

