

Giorgiomaria Cicero

Curriculum Vitae

Embedded Software Engineer

	Personal Information						
Address	Via Vanella tre, 7 Modica(RG) Italy 97015						
Mobile	+39 3337229346						
email	giorgiomariacicero@gmail.com						
Date of birth	18 Jan 1989						
	Education						
2014-2017	Master's Degree (MSc) Embedded Computing Systems, Scuola Supe- riore Sant'Anna, University of Pisa, Pisa,						
	Real-time operating systems for single-core and multi-core, microprocessors, model- based design, software validation/verification, sensory acquisition and processing, mechatronics, digital control systems, robotics, distributed systems, optimization methods, modelling and timing analysis, advanced human-machine interfaces, virtual and augmented reality, dependable and secure systems						
Grade	110/110 cum laude						
Thesis							
Title	A dual-hypervisor for platforms supporting hardware-assisted security and virtualization						
Supervisors	Prof. Giorgio Buttazzo & Dr. Alessandro Biondi						
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2008-2013	Algorithms, data bases, programming, software engineering, OSs, logical networks, electronic calculators, digital communications, automation, digital and analogue electronics, applied mechanic						
Grade	97/110						
Thesis							
Title	Embedded signal acquisition, storage and transmission for a rocket powered micro-gravity experiment.						
Supervisors	Prof. Luca Fanucci & Dr. Daniel Cesarini						

Experience

2017-present **Research Fellow**, *Retis lab, Tecip Institute, Scuola Superiore Sant'Anna*. Working on solutions for real-time cyber-physical systems, Mixed Independent Levels of Security (MILS) systems, low-level cyber-security.

Task covered:

- Researching and developing temporal and spatial isolation mechanisms for multicore platforms.
- Development of a safe, secure and hard real-time Type-1 Hypervisor for heterogeneous platform.
- Cyber-security solutions in the automotive field, in collaboration with Magneti Marelli.

2015 Trainee, ESTEC - European Space Agency, Noordwijk, The Netherlands.

(6 months) Working on EagleEye. EagleEye is a reference mission of ESA to try out and evaluate methods, technologies, and tools for space mission development by simulating and Earth Observation satellite. The job was mainly focused on porting the Satellite Central Software to a hypervisor TSAL/AIR based on ARINC653 to support the Time and Space Partitioning.

Task covered:

- Implementation of a BSP for TSAL/AIR in ORK (RTOS) allowing Ada partitions to interface with the AIR operating system
- Adaptation of C partitions to interface with the AIR operating system
- $\circ~$ Upgrade EagleEye CSW v5 to support TSAL/AIR
- A link to a Reference Letter is available at the end of the CV or clicking here.
- 2013 2015 **On Board Software Responsible**, *PHOS Selected Team for the ESA REXUS 18 Campaign*, University of Pisa.

PHOS Project is one of the selected experiment which had the possibility to fly on board REXUS 18 sounding rocket, succesfully launched on March 2015 from Kiruna (Sweden). The main aim of PHOS's mission is to test in a milli-g environment a Pulsating Heat Pipe having an internal diameter greater than the critical one working on Earth.

Task covered:

- On Board Software (Design, Development and Test)
- On Board Data Handling and Hardware Architecture Design
- Firmware Development for the Power Management System

Projects

- Implementation of the Semi-Partitioning Scheduling (C=D) for multiprocessors systems running on RTSIM (Real-Time system SIMulator)
- BAXTER Inverse Kinematics and Teleoperation by using Kinect+IMU for hand position+orientation and ROS to control joint states of the antropomorfic robot.
- Waterika Embedded system for swimmers/trainer (wet/dry segment). Measurements acquisition and wireless communication in a constrained environment (Running on Cortex-M4).
- Gravity compensator: real-time system able to compensate in a plane the gravity variations experienced by the base (Running on Cortex-M3).
- Greenhouse simulation (IoT) with Contiki motes in a virtualized environment (Cooja)
- Decision marker able to assign worker to a specific task in order to reduce risks connected to it (computational intelligence)
- Virtual chess: chess game virtualized in a distributed, virtual and augmented environment.
- Active Monitors: implementation of a 'randez-vous' mechanism in Java.

Publications

- 2018 "Reconciling Security with Virtualization: A Dual-Hypervisor Design for ARM TrustZone" in In Proc. of the 19th International Conference on Industrial Technology
- 2015 "PHOS experiment: thermal response of a large diameter Pulsating Heat Pipe on board REXUS 18 rocket"in In Proc. of the 22nd ESA PAC Symposium

Technical skills and competences

Programming

- οC Languages
 - C++
 - o Java
 - Python
 - Assembly
 - Shell scripting

Modeling

- Languages SysML
 - o UML
 - Simulink

RTOS

- Erika-Enterprise for ARM
 - RTEMS for SPARC V8

- Contiki
- Linux
- XtratuM (hypervisor)

Standards

Other OSs

- ARINC 653
- MIL-STD 1553
- OSEK/VDX

Processor

Other Tools

- Papyrus
- o Cooja
- Sisotool
- Matlab&Simulink

- OpenMP (Parallel Programming)
- Verilog
- VHDL
- Visual Basic
- o lAT_FX

- ORK+ for SPARC V8
- FreeRTOS for ARM
- AIR (hypervisor)
- Xvisor (hypervisor)

- XVR
- ARM Fast Models
- ARM Cycle Models
- Lauterbach

- Real-time Systems for single/multi-core
- ARM TrustZone
- Virtualization and cyber-security techniques
- Computational Intelligence & Machine Learning
- Digital Control Systems

Organisational skills

- o Ability to manage work in order to respect mandatory deadlines
- Ability to work under stress conditions
- $\circ~$ Work experiences in a team
- Plan a project schedule by using GANTT Charts

Languages

	Under	standing		Speaking		Writing		
English	Listening B2	Reading B2	Spoken intera B2	action	Spoken production B2	B2		
	Interests							
	∘ Guitar			o Mountain Bike				
	0 Tennis		 Swimming 					
	 Martial Arts 			 Trekking 				
	Additional information							
Driving license	Italian, B							
Reference Letters	Ms. Maria Hernek, Head of the Flight Software Systems Section, ESA/ESTEC. Click to download the letter.							
Misc	Open to work in foreign country. Available to work flexi-time and during weekends.							