



PhD in Information Technology and Electrical Engineering
Università degli Studi di Napoli Federico II

PhD Student: Giuseppe Guida

Cycle: XXXV

Training and Research Activities Report

Year: First

Student signature

Tutor: prof. Alessandro Cilardo

tutor signature

Date: October 21, 2020

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1. Information:

- **PhD student:** Giuseppe Guida
- **DR number:** DR994200
- **Date of birth:** 23/09/1990
- **Master Science degree:** Computer Engineering **University:** Naples Federico II
- **Doctoral Cycle:** XXXV
- **Scholarship type:** *no scholarship*
- **Tutor:** Alessandro Cilardo
- **Co-tutor:**

2. Study and training activities:

Activity	Type ¹	Hou rs	Credits	Dates	Organizer	Certifi cate ²
“Intelligenza Artificiale ed etica: La ricerca in IA alla prova delle sfide etiche”	Course	6	1.6	06/12/29	Dr. Roberto Prevete	N
“Introduction to CERN and wakefield measurements at CLEAR”	Seminar	2	0.4	18/11/2019	Prof. Arpaia Pasquale	Y
“Blockchain for beginners”	Seminar	3	0.6	12/11/2019	Prof. Pierluigi Rippa	Y
“Lo spazio cibernetico come dominio bellico”	Seminar	2	0.4	15/11/2019	Prof. Guglielmo Tamburrini	Y
“Safety Critical Systems for Railway Traffic Management”	Course	20	3.3		Prof .Antonino Mazzeo; Prof. Nicola Mazzocca	Y
“Cybersecurity and fuzzing for robots, blockchain and more”	Seminar	1	0.2	13/01/2020	Dr. Roberto Natella	Y
“MATLAB Fundamentals”	Course		2		Dr. Ing. Stefano Marrone	Y
“Scientific Programming and	Course	20	2	27/02/20204/ 03/2020	Prof. Alessio Botta	Y

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Visualization with Python”						
“Elettromagnetismo e salute”	Seminar	1	0.2	09/04/2020		N
“Computational Biology: Large scale data analysis to understand the molecular bases of human diseases”	Seminar	1	0.2	09/04/2020	DIETI	Y
“How to get published with IEEE”	Seminar	2	0.4	20/04/2020	Dott.ssa Alessandra Scippa	Y
“Innovation Management, entrepreneurship and intellectual property”	Course		5	05/05/2020-05/06/2020	Prof. Pierluigi Rippa	Y
“Virtualization technologies and their applications”	Course	20	4	06/04/2020-30/04/2020	Prof. Domenico Cotroneo	Y
“Big Data Analytics and Business Intelligence”	Course		6		Prof. Vincenzo Moscato	Y
“Large Scale training of deep neural networks”	Seminar	2	0.4	06/05/2020	Prof. Carlo Sansone	Y
“Design e nuove tecnologie. Possibili scenari per fronteggiare l'emergenza”	Seminar	1	0.2	11/05/2020	Innovation Village	Y
“Access the eLearning library on IEEE Xplore”	Seminar	1	0.2	04/05/2020	Dr.ssa Alessandra Scippa	Y
“Health 4.0 – La rapidità della medicina e la velocità del cambiamento del nostro mondo organizzato da Università degli Studi di Napoli Federico II”	Seminar	2	0.4	14/05/2020		N
“Joint Design of Optics and post-processing Algorithms Based on Deep Learning for Generating Advanced Imaging Features”	Seminar	2	0.4	19/05/2020	Dr. Raja Gyres	Y

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“Planning 5G under EMF constraints: challenges and opportunities”	Seminar	2	0.4	18/05/2020	Prof. Luca Chiaraviglio; Dr.ssa Cacciapuoti; Dr. M. Caleffi	N
“Virtual Seminars on sensing”	Seminar	3	0.8	20/05/2020	Prof. Carlo Forestiere	Y
“La programmazione Europea e la ricerca. Nuovi scenari della programmazione europea dopo il 2020 – La gestione di un progetto di ricerca”	Seminar	2	0.4	13/05/2020	Innovation Village	N
“Machine Learning”	Course	20	4	6-17/07/2020	ITEE-ICTH	Y
“Intelligenza Artificiale”	Course		6		Prof.ssa Flora Amaro	Y

1) Courses, Seminar, Doctoral School, Research, Tutorship

2) Choose: Y or N

2.1. Study and training activities - credits earned

	Courses	Seminars	Research	Tutorship	Total
Bimonth 1	-	3	7	-	10
Bimonth 2	3.3	0.2	6.5	-	10
Bimonth 3	4	0.8	5.2	-	10
Bimonth 4	15	2.8	2.2	0.4	20.4
Bimonth 5	10	-	5	-	15
Bimonth 6	-	-	10	-	10
Total	32.3	6.8	35.9	0.4	75.4
Expected	30 - 70	10 - 30	80 - 140	0 - 4.8	

3. Research activity:

During the first year of my PhD I spent around four months on studying and analyzing the problems concerning my topic of research. I studied how the virtualization applies to the embedded field and I gathered knowledge about the state of the art of virtualization techniques. I did the same for modern IT security techniques applied to embedded devices, especially reconfigurable devices. During the following months, I managed to identify a target platform on which to further study, design and possibly implement, valid proof-of-concepts of a secure hypervisor. For this reason I started studying target platform's hardware and software architecture by reading the relative online documentation and customizing to my needs some of the examples made public by the online community. In the last three months I studied how to apply my research activities to the railway context, analyzing the advantages and disadvantages that may arise by using a secure hypervisor as an additional software layer.

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4. Research products:

5. Conferences and seminars attended

In January 22nd, 2020 I've attended the PRIN SPHERE 2017 meeting held in Modena organized by the Università of Modena e Reggio Emilia. I gave a presentation regarding my research activities in the field of security and virtualization of embedded devices, explaining how it is possible to combine the two aspects by involving hypervisors as an additional level of software indirection.

6. Activity abroad:

7. Tutorship

Two lessons of two hours each, for a total amount of four hours. Course Calcolatori Elettronici I.