



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

Academic year: 2020-21 - PhD Year: Second

student signature

Giuseppe Guida

Tutor: prof. Alessandro Cilardo

tutor signature

Co-Tutor:

Date: October 21, 2021

Training and Research Activities Report

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Cycle:

Author:

1. Information:

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

2. Study and training activities:

Activity	Type ¹	Hours	Credits	Dates	Organizer	Certificate ²
L'esperienza del progetto di tele-riabilitazione NEUROREAB	Seminar	3	0,6	24/11/2020	ing. D. Furno e ing. L. Romanelli,	Y
Robot Manipulation and Control	Seminar	2,5	0,5	17/11/2020	Prof. Bruno Siciliano	Y
Data Management	Course		6	12/02/2021	Prof. Flora Amato	Y
Statistical data analysis for science and engineering research	Course		4	19/04/2021	Prof. Roberto Pietrantuono	Y
Real-Time Embedded systems for I4.0 and IIoT	Course		5	22/07/2021	Prof. Marcello Cinque, Prof. Alessandro Cilaro	Y
SAE 2021 -Big4Small, Data Science Methodology Transfer: Big to Small	Seminar	2	0.4	24/09/2021	Valentijn Keptin	N

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

2) Choose: Y or N

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2.1. Study and training activities - credits earned

	Courses	Seminars	Research	Tutorship	Total
Bimonth 1	0	1,1	8,9	0	10
Bimonth 2	6	0	4	0	10
Bimonth 3	4	0	6	0	10
Bimonth 4	0	0	10	0	10
Bimonth 5	5	0	5	0	10
Bimonth 6	0	0,4	9,6	0	10
Total	15	1,5	43,5	0	60
Expected	30 - 70	10 - 30	80 - 140	0 - 4,8	

3. Research activity:

During the second year of my PhD I focused on the in-depth study and analysis of modern railway signaling systems, in particular the European ETCS / ERTMS system, as well as the Italian national system known as SCMT. The analysis and study were conducted through the reading of the official documents known as "SUBSET" defined by UNISIG and approved by the ERA European Railway Agency and by the many documents mentioned in the aforementioned subsets, especially those defined by official agencies such as NIST , ITU-T. During this study I was able to understand how to apply the research topic related to virtualization to the railway signaling domain. Especially in anticipation of the architectural evolutions that the ETCS / ERMTS system itself will undergo.

4. Research products:

No research products yet.

5. Conferences and seminars attended

No conferences and seminars held abroad attended.

6. Periods abroad and/or in international research institutions

No period abroad.yet.

7. Tutorship

No tutorship yet.

8. Plan for year three

For my third year of PhD I set out to carry out a complete testing activity of an open source hypervisor that can be adapted to the needs of the railway sector. Since the introduction of an additional indirection software level that stands between an operating system and a hardware (not necessarily always the same) can be an obstacle to the SIL4 certification of an on-board or ground system, I intend to study and design a strategy validation that will be both solid and innovative in

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order to allow an institution that wants to use an homemade or an open source virtualization solution to validate their product and subject them to a rigorous assessment by an external body.