Curriculum Vitae et Studiorum

Michele Ruta

March 22, 2021

Contents

Personal Information

Current affiliation
Department of Electrical and Information Engineering (DEI)
Polytechnic University of Bari
via E.Orabona, n. 4 - I-70125 Bari (Italy)

tel: +39 080 596 3316 – fax: +39 080 596 3410
mobile: +39 339 635 4949
e-mail: michele.ruta@poliba.it
URL: http://sisinflab.poliba.it/ruta/

Home address
piazza Don Antonio Bello n. 6/B - I-70037 Ruvo di Puglia, Bari (Italy)

Current Position

since august 1, 2019 Full Professor in the Scientific and learning sector ING-INF/05 (09/H1) - Information Systems. Formerly -since february 23, 2015- Associate Professor and -since december 30, 2008- Assistant Professor

since july 26, 2018 National Scientific Qualification as Full Professor according to the provision of law n. 240/2010, art. 16 for the competition sector 09/H1-Information Systems (ING-INF/05). Formerly -since december 3, 2013- qualification as Associate Professor

since august 07, 2018 National Scientific Qualification as Full Professor according to the provision of law n. 240/2010, art. 16 for the competition sector 01/B1-Computer Science (INF/01). Formerly -since january 19, 2015- qualification as Associate Professor

Scientific activity in short

My research activity is mainly focused on the application of knowledge representation techniques and technologies to resource-constrained and unpredictable systems. Particularly, I have investigated the possibility of adopting these techniques and tools to mobile and ubiquitous computing and to the Internet of Things. This interest has been fostered –on one hand– after verifying the incompleteness and inadequacy of most common service/resource discovery technologies if applied in volatile and unpredictable contexts. On the other hand, it is evident that is strongly needed a revision of some ideas and approaches of classic Knowledge Representation in order to comply with novel scenarios: it is required a systematic redesign aiming to apply them to highly flexible structures and systems which are also unstable and computationally limited. With these premises, my research interests have been directed to: i) study and test novel methods and protocols for the semantic-enhanced resource discovery for the ubiquitous computing, ii) to analyze performances and perform optimization in terms of efficiency and quality of service, iii) to devise techniques and algorithms for the automated reasoning to be applied to distributed knowledge bases. Basically, in these years I have worked to several testbeds based on Bluetooth piconets, Wi-Fi, on the RFID or ZigBee protocols for objects networks and finally on KNX and LonWorks for complex control and actuation networks. More recently I have also investigated the Blockchain technology.

1   Education

Ph.D. in Information Engineering. Polytechnic University of Bari. June 13, 2007.
Dissertation title: *Knowledge Representation and Management Methods for Mobile
Systems and Contexts* [142]. Tutor: Proff. G. Piscitelli, E. Di Sciascio. My Ph.D.
dissertation is focused on the adoption of knowledge representation techniques and
technologies to improve the service discovery in application protocols of current
wireless and mobile standards.

License to practice Engineering. I'm enrolled in the Engineers register of Bari since
January 21, 2004.

Laurea in Electronic Engineering. Polytechnic University of Bari. December 17, 2002.
Dissertation title: *Design and development of an IP-based tele-control system*[143].
Supervisors: Proff. G. Piscitelli, E. Di Sciascio, Dr. T. Ricci (Getronics S.p.A.).
This work is one of the early examples of IP-based control networks. It adopted
the application protocol LonWorks by Echelon Corp. within a UDP/IP network
to implement a prototypical industrial application.

Diploma High school "Orazio Tedone" - Ruvo di Puglia. July 1994.

2   Research Interests

My research activity, started in 2003 soon after my graduation, has been mainly devel-
oped at Polytechnic University of Bari in the Information Systems Laboratory research
group (http://sisinflab.poliba.it/).
Main research topics I have been investigating are listed in what follows.

2.1   Research topics

- **Semantic-based Resource discovery** (see [116, 141, 22, 110, 140, 20, 19, 107,
  18, 82, 73, 70, 11, 61, 60, 56, 42]). In order to improve mobile discovery mechanisms
  there has been the idea –proposed for the first time in 2002 by Avancha et al.–
  of replacing techniques based on numeric service identifiers (as in Bluetooth) with
  tools borrowed from the Semantic Web. Starting from my Ph.D. course, I have
  devised and implemented a discovery mechanism based on resource annotation
  and on the exploitation of logic-oriented matchmaking. By means of a semantic
  facilitator, it is possible to select one or more resources able to satisfy a query also
  not completely. By leveraging the semantics associated to descriptions, that facil-
  itator replies with a list in relevance order of resources best covering the original
  request. The peculiarity is basically in integrating advanced matchmaking tools
  and non-standard inference services in a semantic layer to be put on the top of the
  Service Discovery Protocol (SDP) of the original stack. It is completely ensured
  the full reuse of legacy features of a protocol (backward compatibility) preserving
  unchanged all the basic characteristics. Before modifying each Service Discovery
  Protocol, all possible variants have been software simulated in order to evaluate
  their impact on the turnaround time, computational load and bandwidth with
  respect to the original stack. Obtained results have been quite encouraging.

- **Resource composition/orchestration/substitution** (see [115, 108, 105, 104,
  103, 122]). The idea behind this approach is to extend to mobile systems and envi-
  ronments a fully developed system for the organization, composition and possibly
  substitution of available services, in order to cover user requests as much as pos-
  sible. With particular reference to a mobile context, in literature attempts can be

found primarily oriented at transferring the theoretical framework of the already mature applications in the field of Web Services: nevertheless, interfacing mobile devices (with inherent memory, battery drain and computational capability issues) with knowledge bases and inference engines showed immediately the technological limitations of this kind of approaches. Studies and analyses I have carried out have primarily lead to the definition of a novel protocol paradigm allowing for the composition according to the IOPE (Input/Output/Preconditions/Effects) model, also providing substitutability sub-classes in case of zombie resources/services. It means that within the set of component services of a complex mobile service, it is possible to identify in a fully automatic way substitute services for each set element, which can be replaced with the "first-string" service without impairment of the execution phase. The identification of substitutability classes is an extremely important feature in any kind of volatile context. It is indeed remarkable that, in order to guarantee the quality of service and the continuity of provisioning, a component service can be replaced if it has dynamically changed its characteristics so as to become unavailable or unfit for request satisfaction. The presence of an analogous substitute service allows to keep unchanged and, most importantly, to avoid jeopardizing the previous processing steps.

- **Mobile reasoning** (see [21, 102, 101, 97, 92, 90, 89, 139, 86, 85, 14, 81, 78, 132, 71, 10, 67, 34, 65, 53, 33, 43]). A relevant role in a decentralized architecture for knowledge representation is covered by a reasoning system for mobil devices, providing a set of non-standard inference services adopted for ranking resources and services discovered in a given environment. Hence, I have worked formerly to a matchmaker prototype based on structural algorithms and object-oriented databases. Afterwards, I have attempted to implement the first mobile matchmaker able to implement standard and non-standard inference services of abduction, contraction and covering in ubicomp scenarios. There are several versions now and particularly for Android and iOS operating systems.

- **u-KRS: ubiquitous Knowledge Representation Systems** (see [17, 15, 83, 37, 76, 51, 49]). The mobile reasoning framework provides the first architectural and functional elements of an infrastructure for the management and the exploitation of ubiquitous Knowledge Bases (u-KBs). In order to realize this infrastructure completely, it is needed to allow a transparent access to small-size knowledge bases distributed across different nodes in a mobile ad-hoc network. Since information concerning resources of interest can be physically tied to the resources themselves, it is desirable to avoid imposing a centralization of information to manage procedures required by applications. In a u-KB every node will be responsible of a part of the knowledge base individuals. In the same way, queries on the knowledge base will need to allow a complete access to information elements as much as possible, as if they were stored centrally.

- **Semantic Web of Things** (see [111, 106, 95, 138, 79, 74, 62, 57, 52, 50, 47, 7, 121, 45, 4, 119, 117]). This term has been thought in 2009. The main goal of this research topic has been the high level integration not only among users, but between users and objects and objects among them, taking into account all the problems stemming from the mobility of both. Also in this case, information will be managed by means of knowledge representation technologies derived from the Semantic Web. First of all, an in-depth analysis has been conducted on methods for the extension of current technological standards in order to support the storage on-board the networked objects and the suitable extraction of proper descriptions of them and of the context they are dipped in. Furthermore, methodologies have

been defined for the application-level integration of wireless technologies and different mobile service discovery protocols, in order to create a unified framework capable to support advanced resource discovery. Theoretical studies have lead to the implementation of an articulated test bed within a simulation platform and it has been also proven as extension of the Google Physical World framework. The object (b)logging term has been coined to denote this novel propensity of objects to recognize the context they dwell in (even as it evolves) and to offer advanced and semantically unambiguous descriptions of their "status" to those who interrogate them. This high-level information is directly accessible by any capable distributed system the object is located in: it is unnecessary any large-scale telematic support infrastructure. In order to support the real feasibility of that approach, the severe constraints of storage and computational resources of current mobile devices have been taken into account, as well as the limited transmission capacity allowed by protocols for low-power wireless ad-hoc networks. One of the most relevant problem is verbosity of annotation languages (based on XML). To this aim a specific algorithm to compress semantic annotations has been conceived, designed and implemented, with the capability to support the storage of a medium complexity description even on an RFID transponder. There exixst also a homomorphic extension of the algorithm to support information queries and updates directly on the compressed format, without the need for decompression.

- **Control networks and building automation** (see [84, 13, 80, 135, 134, 36, 131, 35, 12, 128, 127, 124, 8, 48, 123, 120, 3]). This research application is basically a verification scenario for theoretical studies carried on the adoption of knowledge representation techniques to critical contexts. In the building automation, the environmental control is realized by exploiting pre-programmed procedures. There are several ways to configure such systems, but classical approaches have the limit that every user-context interaction must be necessarily programmed at the system set-up stage. In order to make such architectures more dynamic and flexible, knowledge engineering technologies can be applied to control networks. In particular, by endowing building automation systems with knowledge representation and management capabilities, it is possible to make them able to execute implicit logical deductions starting from an explicit representation of both context and user requests. Carried out experiments have conducted to the extension of two of the most widespread open and interoperable standards for building automation (i.e., EIB/KNX and Echelon LonWorks) and to the implementation of a social network of home appliances. It has been also realized a concrete implementation tested successfully in a real household.

- **Content-based networking** (see [96, 16]). Another research topic has been the integration of a semantic service/resource discovery layer with the routing one within the ISO/OSI model for performance improvement of a mobile ad-hoc network (in terms of hit and delivery ratio, as well as of reduction of delivery delay). This can provide a contribution to the realization of content-based networking, as envisioned by Van Jacobson in 2009, by exploiting artificial intelligence techniques. It has been defined a suitable protocol (802.11 has been chosen as basic communication framework), capable of granting an effective dissemination of data required to retrieve a posteriori the services and/or resources in an on-demand fashion. This protocol is based on the reuse of service discovery information for network layer signaling, in order to reduce the overhead induced by routing procedures: there is a substantial similarity of many application-layer procedures with network-layer and transport-layer ones. Carried experiments have shown interesting results in terms of both quality of service enhancement and routing performance. The pro-

posed framework has been also modified and simplified for emerging applications as the ones for wireless semantic sensor networks and mobile grids. It has been also studied and implemented a variant of ZigBee protocol for sensor and actor networks and mobile semantic grids.

- **E-Commerce** (see [41, 114, 23, 112, 109, 98, 94, 88, 46]). Among possible semantic-based resource retrieval scenarios, the electronic commerce in mobile and peer-to-peer contexts is one of the most interesting. It allows to leverage the notion of incomplete information which typical of the early stages of semantic-based resource and service discovery.

- **Skill management** (see [40, 100, 39, 133]). Skill management issues I have considered in my research activity are mostly focused on the task assignment and on the automatic course composition for e-learning scenarios. There have been proposed solutions adopting ontology-based systems for skill and competences classification of employees in a given organization in order to compare them with the description of the job/task to be covered. This matchmaking also allows to select best candidates to compose a team able to solve complex problems. This theoretical approach has been implemented in the commercial tool named I.M.P.A.K.T..

- **Machine Learning** (see [38, 136, 130, 68, 66, 125, 55, 54, 44, 2]). For what concerns studying and application of machine learning techniques, there has been proposed an optimization of algorithms in literature oriented to not-supervised clustering of data, where knowledge representation has been adopted to improve the accuracy.

- **Model Checking** (see [25, 24]). The study and analysis of formal models is an interest I have kept along these years. Basically, I have early investigated the Model Checking as tool for detecting anomalies in articulated software systems. More recently I have surveyed a possible integration between formal models with semantic representation of information in order to identify failures and inefficiencies in complex real systems in a proper and accurate way.

- **Decision/actuation support in healthcare** (see [99, 93, 129, 72, 9, 59, 5, 1]). The adoption of knowledge representation for healthcare discloses interesting possibilities. This is true for diagnosis support and terapy verification, but also for actuating feedback on the human body after a inferential deduction on given biosignals properly annotated.

- **Infomobility** (see [113, 91, 87, 137, 77, 75, 69, 63, 126, 64, 58, 6, 118]). It is a complex scenario where user-generated information is integrated with the environmental one and with the one coming from vehicles (if present). The interaction user-(vehicle)-context produces really rich data, but with high variability. Hence, it is interesting to extract from them a local control through proper knowledge management schemes. It is also relevant the possibility of propagating high level information (locally integrated and inferred) towards peripheral nodes of nomadic networks. There have been studied applications for both data fusion and advanced cartography purposes.

3   Awards

- **Design contest** for six subsidized, experimental buildings leveraging domotic systems, within the "Contratto di Quartiere - Borgo La Martella" initiative in Matera. First placed

- **Best Paper Award** at the 9th International Conference on Electronic Commerce ICEC 2007 for the paper "RFID Meets Bluetooth in a Semantic Based U-commerce Environment" [109]

- **AICA-CSIT 2006 Award** to the Master thesis of Dr. Floriano Scioscia supervised by me. Best thesis in the ICT sector

- **Best Paper Award** at the 4th International Conference on Advances in Semantic Processing SEMAPRO 2010 for the paper "Semantic-based Geographical Matchmaking in Ubiquitous Computing" [92]

- **Award of 56th National Congress of Engineers Professional Order** to the Master thesis of Dr. Nicola De Leo supervised by me. Best thesis in the ICT sector

- **KNX Awards 2012** -"Special" category- at the Light+Building 2012 international exhibition in Frankfurt. Finalist with the project "Semantic Web of Things at Home with KNX"

- **Google Internet of Things (IoT) Technology Research Award** for the research proposal "Physical Semantic Web"

- **Challenge Prize** of the "Nice to Meet You" initiative of the ItaliaCamp association supported by the Italian Ministry of Transport and Infrastructures. Finalist (selected among more than 200 applications) with a prototypical information system for the National Maritime Single Window named ARGES and developed within the EU E.T.C.P. project of the same name

- **Best Reviewer Award** at the 16th International Semantic Web Conference (ISWC 2017)

4   Invited talks, Tutorial, Seminars

- **Keynote talk** at UBICOMM 2010 - The 4th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies. Title "If Objects Could Talk: novel resource discovery approaches in pervasive environments"

- **Panel** at SEMAPRO 2010 - The 4th International Conference on Advances in Semantic Processing. Topic: "Advanced and Semantic Computing for Complex Situations"

- **Keynote talk** at 2012 AIxIA Symposium on Artificial Intelligence

- **Invited talk** at 2nd Green City Energy Forum. Title: "Knowledge representation methods for intelligent buildings and smart cities"

- **Panel** at SEMAPRO 2016 - The 10th International Conference on Advances in Semantic Processing. Topic: "The Internet of Everything: Challenges of Web of Things in Smart Cities"

- **Keynote talk** at 1st International Congress on ICT in Cardiology

- **Invited talk** at I Congresso di Telemedicina e Sanità Digitale - Scenari innovativi nei percorsi organizzativi e nei PDTA

- **Keynote talk** at ICCBB 2018 - The 2nd International Conference on Computational Biology and Bioinformatics

5   Editorial and organizational activity

Editorial Board:

- International Journal on Advances in Intelligent Systems (pub. International Academy, Research and Industry Association (IARIA))

- International Journal on Advances in Internet Technology (pub. International Academy, Research and Industry Association (IARIA))

- Book on Smart Manufacturing Innovation and Transformation: Interconnection and Intelligence (pub. IGI Global and Scopus indexed)

- Book series on Artificial Intelligence, Computer Engineering, Theoretical Computer Science, Web Technologies di CyberTech Publishing

- Mobile Information Systems (pub. Hindawi and Scopus indexed) - SJR 2017: 0.224, CiteScore 2017: 1.13, JCR IF 2017: 0.958

- Book series on Advances in Web Technologies and Engineering (pub. IGI Global)

- Book collection Research Insights (pub. IGI Global)

- International Journal of Green Computing (pub. IGI Global)

Guest/Associate Editor:

- International Journal of Information Technology and Web Engineering (pub. IGI Global and Scopus indexed) - SJR 2017: 0.168, CiteScore 2017: 0.64

Chair/Organizer:

- 2nd International Conferences on Advanced Service Computing (Service Computation 2010). Co-organizer and advisory chair

- 1st International Workshop on Semantic based Opportunistic Data Management (SODM 2011) (in conjunction with the 12th International Conference on Mobile Data Management (MDM 2011)) - Proceedings pub. IEEE and Scopus indexed [32]. Co-organizer and general chair

- 3rd International Conferences on Advanced Service Computing (Service Computation 2011). Co-organizer e advisory chair

- 5th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2011) - Proceedings pub. ThinkMind (ed. IARIA XPS Press) and Scopus indexed. Co-organizer e research chair

- 4th International Conferences on Advanced Service Computing (Service Computation 2012). Co-organizer and advisory chair

- 6th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2012) - Proceedings pub. ThinkMind (ed. IARIA XPS Press) and Scopus indexed [31]. Co-organizer and research chair

- 7th FTRA International Conference on Multimedia and Ubiquitous Engineering (MUE 2013) - Proceedings pub. Lecture Notes in Electrical Engineering (ed. Springer) and Scopus indexed. Co-organizer and publicity chair

- 5th International Conferences on Advanced Service Computing (Service Computation 2013). Co-organizer e advisory chair

- 3rd International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2013) (in conjunction with Ambient Systems, Networks and Technologies Conference (ANT 2013)) - Proceedings pub. Procedia Computer Science (ed. Elsevier) and Scopus indexed [29]. Co-organizer and general chair

- 7th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2013) [30]. Co-organizer and research chair

- 6th International Conferences on Advanced Service Computing (Service Computation 2014). Co-organizer and advisory chair

- 8th FTRA International Conference on Multimedia and Ubiquitous Engineering (MUE 2014) - Proceedings pub. Lecture Notes in Electrical Engineering (ed. Springer) and Scopus indexed. Co-organizer and workshop chair

- 1st International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2014) [28]. Co-organizer and general chair

- 8th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2014). Co-organizer and research chair

- 7th International Conferences on Advanced Service Computing (Service Computation 2015). Co-organizer and advisory chair

- 9th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2015). Co-organizer and research chair

- 2nd International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2015) [27]. Co-organizer and general chair

- 8th International Conferences on Advanced Service Computing (Service Computation 2016). Co-organizer and advisory chair

- 10th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2016) [26]. Co-organizer and research chair

- 1st International Workshop on Semantic Opportunistic Object Networks (SOON 2016) co-located with the 10th International Conference on Advances in Semantic Processing (SEMAPRO 2016). Co-organizer and general chair

- 3rd International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2016), co-located with the 10th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2016). Co-organizer and general chair

- 9th International Conferences on Advanced Service Computing (Service Computation 2017). Co-organizer and steering committee member

- 7th International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2017) (in conjunction with Ambient Systems, Networks and Technologies Conference (ANT 2017)) - Proceedings pub. Procedia Computer Science (ed. Elsevier) and Scopus indexed. Co-organizer and program chair

- 3rd Italian Conference on ICT for Smart Cities and Communities (I-CiTies 2017). Co-organizer and general co-chair

- 11th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2017). Co-organizer and steering committee member

- 10th International Conferences on Advanced Service Computing (Service Computation 2018). Co-organizer and steering committee member

- 8th International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2018) (in conjunction with Ambient Systems, Networks and Technologies Conference (ANT 2018)) - Proceedings pub. Procedia Computer Science (ed. Elsevier) and Scopus indexed. Co-organizer and program chair

- 4th Italian Conference on ICT for Smart Cities and Communities (I-CiTies 2018). Co-organizer and general co-chair

- 12th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2018). Co-organizer and steering committee member

- 11th International Conferences on Advanced Service Computing (Service Computation 2019). Co-organizer and steering committee member

- 9th International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2019) (in conjunction with Ambient Systems, Networks and Technologies Conference (ANT 2019)) - Proceedings pub. Procedia Computer Science (ed. Elsevier) and Scopus indexed. Co-organizer and program chair

- 13th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2019). Co-organizer and steering committee member

- The 2019 IEEE Conference on Systems, Man, and Cybernetics (SMC 2019). Co-organizer and special sessions chair

Program Committee:

2007

- UBICOMM 2007 - The 1st International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies

2008

- UBICOMM 2008 - The 2nd International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- KES 2008 - The 12th International Conference on Knowledge-Based & Intelligent Information & Engineering Systems - Invited Session: Engineered Applications of Semantic Web - SWEA
- EC-Web 2008 - The 9th International Conference on Electronic Commerce and Web Technologies

2009

- Service Computation 2009 - The 1st International Conference on Advanced Service Computing
- UBICOMM 2009 - The 3rd International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- DCDS 2009 - The 2nd IFAC Workshop on Dependable Control of Discrete Systems

2010

- Service Computation 2010 - The 2nd International Conference on Advanced Service Computing
- SEMAPRO 2010 - The 4th International Conference on Advances in Semantic Processing
- UBICOMM 2010 - The 4th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- WOA 2010 - Undicesimo Workshop Nazionale "Dagli Oggetti agli Agenti"
- ICMB/GMR 2010 - The 9th International Conference on Mobile Business and the 9th Global Mobility Roundtable

2011

- SEMAPRO 2011 - The 5th International Conference on Advances in Semantic Processing
- UBICOMM 2011 - The 5th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- ATI 2011 - The 1st International Workshop on Ambient Things on the Internet (co-located with WISE 2011)
- Service Computation 2011 - The 3rd International Conference on Advanced Service Computing
- AFIN 2011 - The 3rd International Conference on Advances in Future Internet
- WOA2011 - Dodicesimo Workshop Nazionale "Dagli Oggetti agli Agenti"
- SSW 2011 - The 1st International Workshop on Semantic Search Over the Web (co-located with CAiSE 2011)

2012

- SEMAPRO 2012 - The 6th International Conference on Advances in Semantic Processing
- UBICOMM 2012 - The 6th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- WOA 2012 - Tredicesimo Workshop Nazionale "Dagli Oggetti agli Agenti"
- IUPT 2012 - The 2nd International Workshop on Internet of Ubiquitous and Pervasive Things (co-located with ANT 2012)
- AFIN 2012 - The 4th International Conference on Advances in Future Internet
- Service Computation 2012 - The 4th International Conference on Advanced Service Computing

- ICMB 2012 - The 11th International Conference on Mobile Business

2013

- EUSPN 2013 - The 4th International Conference on Emerging Ubiquitous Systems and Pervasive Network
- SEMAPRO 2013 - The 7th International Conference on Advances in Semantic Processing
- UBICOMM 2013 - The 7th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- AFIN 2013 - The 5th International Conference on Advances in Future Internet
- IWASI 2013 - The 5th IEEE International Workshop on Advances in Sensors and Interfaces
- Service Computation 2013 - The 5th International Conference on Advanced Service Computing

2014

- AFIN 2014 - The 6th International Conference on Advances in Future Internet
- SEMAPRO 2014 - The 8th International Conference on Advances in Semantic Processing
- UBICOMM 2014 - The 8th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- TETHYS 2014 - The 1st International Workshop Toward Emerging Technology for Harbour sYstems and Services
- Service Computation 2014 - The 6th International Conference on Advanced Service Computing

2015

- ANT 2015 - The 6th International Conference on Ambient Systems, Networks and Technologies
- IUPT 2015 - The 5th International Symposium on Internet of Ubiquitous and Pervasive Things (co-located with ANT 2015)
- Service Computation 2015 - The 7th International Conference on Advanced Service Computing
- IWASI 2015 - The 6th IEEE International Workshop on Advances in Sensors and Interfaces
- SEMAPRO 2015 - The 9th International Conference on Advances in Semantic Processing
- UBICOMM 2015 - The 9th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- MODEST 2015 - The 1st Workshop on Mobile Deployment of Semantic Technologies (co-located with ISWC 2015)
- TETHYS 2015 - The 2nd International Workshop Toward Emerging Technology for Harbour sYstems and Services

2016

- Service Computation 2016 - The 8th International Conference on Advanced Service Computing
- SEMAPRO 2016 - The 10th International Conference on Advances in Semantic Processing
- UBICOMM 2016 - The 10th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- SPLITECH 2016 - The 1st International Multidisciplinary Conference on Computer and Energy Science
- IUPT 2016 - The 6th International Symposium on Internet of Ubiquitous and Pervasive Things (co-located with ANT 2016)
- MODEST 2016 - The 2nd Workshop on Mobile Deployment of Semantic Technologies (co-located with ISWC 2016)
- ADMA 2016 - The 12th International Conference on Advanced Data Mining and Applications

2017

- WORLDCIST 2017 - The 5th World Conference on Information Systems and Technologies
- Service Computation 2017 - The 9th International Conference on Advanced Service Computing
- SPLITECH 2017 - The 2nd International Multidisciplinary Conference on Computer and Energy Science
- ICIT 2017 - The 16th International Conference on Information Technology
- IWASI 2017 - The 7th IEEE International Workshop on Advances in Sensors and Interfaces
- ISWC 2017 - The 16th International Semantic Web Conference
- SEMAPRO 2017 - The 11th International Conference on Advances in Semantic Processing
- UBICOMM 2017 - The 11th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- IoT-ITSL 2017 - The 1st International Workshop on IoT applications in Intelligent Transportation Systems and Logistics (co-located with SOLI 2017)
- UCIOT 2017 : The 1st International Workshop on Utility Clouds for IoT (co-located with UCC 2017)
- ADMA 2017 - The 13th International Conference on Advanced Data Mining and Applications

2018

- Service Computation 2018 - The 10th International Conference on Advanced Service Computing
- SEMAPRO 2018 - The 12th International Conference on Advances in Semantic Processing

- UBICOMM 2018 - The 12th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- WF-5G 2018 - The 1st IEEE 5G World Forum
- WORLDCIST 2018 - The 6th World Conference on Information Systems and Technologies
- ESWC 2018 - The 15th Extended Semantic Web Conference
- ICCGI 2018 - The 13th International Multi-Conference on Computing in the Global Information Technology
- WWW 2018 - The 27th International World Wide Web Conference
- GLOBECOM 2018 - The 37th IEEE Global Communications Conference
- ISWC 2018 - The 17th International Semantic Web Conference
- JIST 2018 - The 8th Joint International Semantic Technology Conference
- COMNETSAT 2018 - The 7th IEEE International Conference on Communication, Networks and Satellite
- AEIT 2018 - The 110th AEIT International Annual Conference

2019

- SMC 2019 - The 2019 IEEE Conference on Systems, Man, and Cybernetics
- Service Computation 2019 - The 11th International Conference on Advanced Service Computing
- WORLDCIST 2019 - The 7th World Conference on Information Systems and Technologies
- GLOBECOM 2019 - The 38th IEEE Global Communications Conference
- WWW 2019 - The 28th International World Wide Web Conference
- ICCGI 2019 - The 14th International Multi-Conference on Computing in the Global Information Technology
- BLOCKCHAIN 2019 - The 2nd IEEE International Conference on Blockchain
- KOGPIT 2019 - The 1st Workshop on Best Practices and Dynamic Knowledge Graphs (co-located with KGSWC 2019)
- IWASI 2019 - The 8th IEEE International Workshop on Advances in Sensors and Interfaces
- HUSO 2019 - The 5th International Conference on Human and Social Analytics
- WF-5G 2019 - The 2nd IEEE 5G World Forum
- COMNETSAT 2019 - The 8th IEEE International Conference on Communication, Networks and Satellite
- SEMAPRO 2019 - The 13th International Conference on Advances in Semantic Processing
- UBICOMM 2019 - The 13th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies
- AMBIENT 2019 - The 9th International Conference on Ambient Computing, Applications, Services and Technologies
- ISWC 2019 - The 18th International Semantic Web Conference

- WI 2019 - The 18th IEEE/WIC/ACM International Conference on Web Intelligence
- MTSR 2019 - The 13th International Conference on Metadata and Semantics Research (Special Track on Metadata, Identifiers and semantics in Decentralized Applications, Blockchains and P2P systems)

Reviewer:

International Journals and Book Chapters

- Earth Science Informatics (Springer)
- IEEE Intelligent Systems
- Information Systems Frontiers (Springer)
- Smart Manufacturing Innovation and Transformation: Interconnection and Intelligence (IGI Global)
- Arabian Journal for Science and Engineering (Springer)
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Sensors Journal
- Journal of Computing and Information Technology (CIT)
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Industrial Informatics
- International Journal of Applied Logistics (IGI Global)
- Journal of Medical Systems (Springer)
- IEEE Transactions on Industrial Electronics
- Journal of Network and Computer Applications (Elsevier)
- Neural Computing and Applications (Springer)
- Unique Radio Innovation for the 21st Century - Building Scalable and Global RFID Networks (Springer)
- IEEE Communications Magazine feature topic on Situation Management
- Encyclopedia of E-Business Development and Management in the Digital Economy (IGI Global)
- Multiplatform E-Learning Systems and Technologies: Mobile Devices for Ubiquitous ICT-Based Education (IGI Global)
- Ad Hoc Networks (Elsevier)
- Future Internet (MDPI)
- International Journal of Sensor Networks (Inderscience)
- Pervasive and Mobile Computing (Elsevier)
- International Journal on Semantic Web and Information Systems (IGI Global)
- Applied Computing and Informatics (Elsevier)
- Neurocomputing (Elsevier)
- IEEE Transactions on Big Data
- Journal of Ambient Intelligence and Humanized Computing (Springer)
- Software: Practice and Experience (Wiley)
- International Journal of Green Computing (IGI Global)

Conferences and Workshops

- ISIE - IEEE International Symposium on Industrial Electronics
- ICDCS - International Conference on Distributed Computing Systems
- SoftCOM - International Conference on Software, Telecommunications and Computer Networks
- EC-Web - International Conference on Electronic Commerce and Web Technologies
- ICEC - International Conference on Electronic Commerce
- SAC - ACM Symposium on Applied Computing
- ISWC - International Semantic Web Conference
- ESWC - Extended Semantic Web Conference
- The Web Conference (formerly WWW)
- GLOBECOM - IEEE Global Communications Conference

6   Research projects

Principal Investigator/Scientific Supervisor

- UBI-CARE (UBIquitous knowledge-oriented healthCARE), funds Apulia POR FESR 2007-13. Supervisor for Polytechnic University of Bari
- BRIKS (BRInging Knowledge to Smart grids: a semantic- based approach), funds Polytechnic University of Bari research budget. Principal Investigator
- DEPASAS (Dematerialization of administrative processes and students' services), funds Ministry of Education, University and Research according to provision of law D.M. 15/10/2013 n.827 - art. 4. Principal Investigator
- PERSON (PERvasive game for perSOnalized treatment of cognitive and functional deficits associated with chronic and Neurodegenerative diseases), funds Apulia POR FESR 2007-13, call for support to regional technological clusters. Supervisor for Polytechnic University of Bari
- WISEWATER (WIreless SystEm for WATER leakage detection and condition monitoring), funds Apulia POR FSC 2007-13, call for OpenLabs: monitoring and leakage detection in the primary and distribution network. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari
- COMPETiTiVE (Claims of Olive oil to iMProvE The market ValuE of the product), funds AGER (network of foundations for the agrifood reearch), 2nd call for "Olive tree and olive oil". Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari
- Apulia CPS/IoT Hub for Regional Digital Manufacturing SME's - Apulia Manufacturing RDMI Hub, funds EU, call I4MS "Feasibility for Regional Digital Manufacturing Innovation Hubs". Supervisor for Polytechnic University of Bari

- ERHA (Enhanced Radiotherapy With HAdrons), funds Sustainable Growth, call Horizon 2020 - PON I&C 2014-2020. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

- BeFree@Campus 2.0 (Barrier and Exclusion-free at university Campus ver. 2.0), funds Polytechnic University of Bari research budget. Principal Investigator

- Si-Ca.Re (Integrated system to monitor and care patients with cardio-renal syndroms), funds Apulia POR FESR-FSE 2014-2020, call INNONETWORK: Support to R&D activities for developing new sustainable technologies, products and services. Supervisor for Polytechnic University of Bari

- C-Lab 4.0 (Competences Lab for Industry 4.0), funds Apulia POR FESR-FSE 2014-2020, call INNOLABS: Support to creation of innovative solutions aimed at specific socially relevant issues. Supervisor for Polytechnic University of Bari

- PORTS (Partnership for the Observation and study of new Routes and Transnational Sea-highways), funds EU Interreg IPA CBC Italy-Albania-Montenegro 2014-2020. Supervisor for Polytechnic University of Bari

- FURTHER (FUture Revolutionary Technologies for Hybrid Electric aiRcrafts), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Aerospace. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

- RPASinAir (Integration of Remotely Piloted Aircraft Systems in a not limited aerial space for innovative civil services), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Aerospace. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

- VASARI (VAlorization of the italian cultural heritage through SmARt servIces), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Cultural heritage. Supervisor for Polytechnic University of Bari

- AMICO (Medical assistance in contextual awareness), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Technologies for ambient assisted living. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

- NSG (New Satellites Generation components), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Aerospace. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

- RAFAEL (System for risk forecasting and management in critical infrastructures of the south of Italy), funds PON Research and Innovation - National Research Program (PNR) 2015-2020 - Specialization area: Smart Secure and Inclusive Communities. Supervisor for the Information Engineering Research Unit of Polytechnic University of Bari

Participant

- CNOSSO (Novel technologies for the enhancement and the fruition of cultural heritage), funds PON Research 2000-06

- PITAGORA (Telematic Platform for Information and Management of Public Transportation Systems), funds FAR according to the provision of law 297/1999
- TOWL (Time-determined ontology based information system for real time stock), funds EU FP-6 IST STREP
- IC Technologies for tracking agrifood products equipped with RFID tags - PE074, funds exploratory projects Apulia region
- Acquiring and managing knowledge on customers to increase competitiveness: innovative models of customer profiling - PE013, funds exploratory projects Apulia region
- IC Technologies for tourist assistance through an interactive virtual guide - PE082, funds exploratory projects Apulia region
- ACAB-C2 (System for Automated Composition of business processes in ERPs using Abduction-based Concept Covering) - PE043, funds exploratory projects Apulia region
- L'OrMaICT (ICT supporting logistic services: a model of ORganized MArket) - PS025, funds strategic projects Apulia region
- Telecommunication Facilities and Wireless Sensor Networks in Emergency Management - PS121, funds strategic projects Apulia region
- DIPIS (Distributed Production as Innovative System) - PS092, funds strategic projects Apulia region
- BOD (Bus On Demand), funds Apulia POR 2000-06, provision 6.2 action C
- ITINERA (Information Technologies for promotion, e-learning and research in archaeology), funds Apulia POR 2000-06, provision 6.2 action C
- De.Ma.S.S. (Design & Manufacturing Sharing System), funds Industry 2015, call "New Technologies for Made in Italy"
- E.R.M.E.S. (Enhance Risk Management through Extended Sensors), funds PON Research and Competitiveness 2007-13
- Ce.S.A.R. (Food certification and safety through RFID), funds RIDITT (Italian network for innovation diffusion and technology transfer to companies) Program 2007-09, national call for funding projects of diffusion and technology transfer to the productive system and setting up hi-tech companies
- G.A.I.A. (Generalized Automatic exchange of port Information Area), funds EU ETCP
- Lean Software Development, funds Apulia POR FESR 2007-13
- AskHealth (Advanced System for the interpretations and sharing of Knowledge in Health care), funds PON Research and Competitiveness 2007-13
- PLATINO (PLATform for INnOvative services in future Internet), funds PON Research and Competitiveness 2007-13
- RES NOVAE (Networks, buildings, roads - Novel improving aims for environment and energy), funds PON Research and Competitiveness 2007-13
- S.L.IM.Port (Safety, Logistics, InterModality for Ports), funds Industry 2015, call "Sustainable Mobility"
- LOG.IN. (Integrated logistics), funds Industry 2015, call "New Technologies for Made in Italy"
- KHIRA (Knowledge Holistic Integrated Research Approach), funds PON Research and Competitiveness 2007-13

- Puglia@Service (Internet-based service engineering to promote structural development of a "smart" territory), funds PON Research and Competitiveness 2007-13

- VINCENTE (A Virtual collective INtelligenCe ENvironment to develop sustainable Technology Entrepreneurship ecosystems), funds PON Research and Competitiveness 2007-13

- BE-Free@campus (Barriers and Exclusion-Free (built environment) at (university) campus), funds Italian Ministry of Education, University and Research

- EFFEDIL (EFFicient Energy builDing Innovative soLutions), funds PON Research and Competitiveness 2007-13

- Digital Apulia 2.0, funds PON Research and Competitiveness 2007-13

- A.R.G.E.S. (pAssengeRs and loGistics information Exchange System), funds EU ETCP

- InnovAALab (Telemedicine system for medical home care and fall risk detection via wearable electromiographs and electroencephalographs), funds Apulia POR FESR 2007-13, call "Living Labs Smart Apulia 2020"

7 Applications and prototypes

I have worked to both design and implementation of several prototypes and software applications starting from my research activity. Most relevant of them are reported in what follows along with a short description:

- **Mini-ME - the Mini Matchmaking Engine**: it is a prototypical mobile reasoner for the Semantic Web of Things. It supports standard Semantic Web technologies through the OWL API and implements both standard reasoning tasks for KB management (subsumption, classification, satisfiability) and non-standard inference services for semantic-based matchmaking and resource ranking (abduction, contraction and covering). Mini-ME has several versions: a Java-based for Android and another one in Java SE. More recently there is also a Swift version for iOS devices. URL: http://sisinflab.poliba.it/swottools/minime

- **iDriveSafe**: it is a mobile iPhone application for semantic-enhanced real-time car diagnostics and driving assistance. It allows to process: vehicle status data collected from an OBD-II Scan Tool; data acquired from embedded smartphone microdevices; optionally, information retrieved from external Web-based data sources. By means of proper data processing and fusion algorithms, the system is able to identify specific high-level events and conditions, based on low-level data streams. Exploiting Semantic Web techniques and technologies, events are annotated w.r.t. an ontology modeling factors influencing driving safety. The matchmaking outcome is used to suggest the driver actions and behaviors to minimize risks. URL: http://sisinflab.poliba.it/swottools/idrivesafe1

- **Mobile User Profiler**: it is a smart profiling agent able to perform an automated profile annotation by adopting Semantic Web languages. The crawler agent runs on the user smartphone and performs a multimodal and continuous detection without human intervention. The agent mines the user habits automatically and annotates them in a logic-based formalism to build a daily profile to be further exploited in context-aware knowledge-based applications. URL: http://sisinflab.poliba.it/swottools/mobile-user-profiler

- **Smart Building Automation**: it refers to a semantic-based framework and tool, able to interface users and devices within a service-oriented home appliance infrastructure in a fully automated fashion. All the applications and devices exploit a semantic-based evolution of EIB/KNX protocol. Machine-to-machine communication and negotiation as well as user interface of an Android application have been developed in a fully functional real home environment. URL: http://sisinflab.poliba.it/swottools/smartbuildingautomation

- **Semantic POI Annotation with JOSM**: it includes a prototypical software tool for editing semantic-based annotations of OpenStreetMap Points Of Interest (POIs), through a fully visual user interface based on simple drag-and-drop operations. The application extends the open source JOSM (Java OpenStreetMap) editor. It can make any OpenStreetMap contributor capable of enriching maps following the Semantic Web/Linked Open Data vision, because no specific knowledge of logic languages and underlying formalisms is required. URL: http://sisinflab.poliba.it/swottools/josm

- **BE-free@campus**: it is a personal navigation application assisting and supporting disabled people in a restrained environment. It is a tool for Android mobile devices. The embedded OsmAnd routing engine takes advantage of the crowd-sourced OpenStreetMap project, whose maps have been enriched with new tags providing accessibility data. The engine has been extended in order to provide multi-level indoor navigation. URL: http://sisinflab.poliba.it/swottools/befree@campus

- **Semantic blockchain Hyperledger Iroha**: it is a prototypical system as semantic-enhanced Service-Oriented Architecture for Internet of Things contexts. Nodes can exploit smart contracts for registration, discovery and selection of annotated services/resources. While semantic matchmaking enables relevant resource retrieval with logic-based ranking and explanation features, blockchain provides reliable transaction storage.

8 Collaboration with national and international research centres

During my research activity I have collaborated –among others– with the following national and international research centres:

- Knowledge Media Institute - The Open University (prof. E. Motta);

- University of Milan (prof. G.P. Rossi);

- ISTI-CNR (National Research Council) Pisa (dr. U. Straccia);

- DOCOMO Euro-Labs Munich (dr. M. Paolucci);

- Tuscia University (prof. F.M. Donini);

- University of Bologna Alma Mater Studiorum (prof. A. Omicini);

- University of London, Birkbeck College (dr. A. Calì);

- University of Bari A. Moro - Department of Computer Science (prof. G. Semeraro);

- University of Bari A. Moro - Department of Emergency and Organ Transplantation (prof. A.I. Guaricci);

- University of Bari A. Moro - Department of Physics (prof. R. Bellotti);

- Macquarie University, Department of Computing (prof. M. Sheng);

- University of California - Berkeley (prof. A. Sangiovanni Vincentelli);

- University of Roma Tre (prof. R. Torlone);

- University of Naples Federico II (prof. A. Pescapé);

- ITIA-CNR (National Research Council) Bari/Milano (dr. M. Sacco);

- Enel Distribuzione S.p.A. - R&D Department (dr. G. Bianco);

- Head of Italian Costguard (Adm. P. Pellizzari);

- Telecom Italia S.p.A. - R&D Department (dr. E.M. Bagnasco);

- University of Ioannina (prof. C. Stylios);

- Google Inc. (dr. D. Ciulli);

- INFN (National Institute of Nuclear Physics) Bari (dr. S.S. Tangaro)

- Leonardo S.p.A. - Land & Battlefield Systems Division (dr. F. Cazzato)

9 Bibliometry

Bibliometric indexes retrieved May 21, 2019:

Scopus (https://www.scopus.com/authid/detail.uri?authorId=13609738400)

- Total citations: 726 by 471 documents
- Hirsch index (H-index): 16

Google Scholar (https://scholar.google.it/citations?user=xxBeKlIAAAAJ&hl=it)

- Total citations: 1185 (782 since 2014)
- Hirsch index (H-index): 21 (14 since 2014)
- i10 index: 35 (23 since 2014)

10 Roles and professional activity

10.1 Institutional roles

I have fulfilled the following institutional roles:

- Coordinator of the unit of Polytechnic University of Bari of the National CINI Lab Smart Cities and Communities

- Scientific Coordinator of Computer Science Lab of Polytechnic University of Bari in Taranto, named Semantic Web of Things (SWoT). At the lab are also affiliated a full professor, an assistant professor, two post-doc fellows, two senior research assistants, a Ph.D. student, two junior researchers and a technical assistant

- Technical and scientific committee of Apulian IT Cluster as representative for Polytechnic University of Bari

- Vice-coordinator of the Bachelor degree in Computer and Automation Engineering - D.M. 270/04 of Polytechnic University of Bari

- Representative for associate professors in the Council of Department of Electrical and Information Engineering of Polytechnic University of Bari

- Co-supervisor of the unit of Polytechnic University of Bari of the National CINI Lab Embedded Systems and Smart Manufacturing

- Delegate of Director of Department of Electrical and Information Engineering for information systems and dematerialization of processes and administration flows

- Rector's delegate for the computerization of university services

- Coordinator of the Master degree in Computer Engineering - D.M. 270/04 of Polytechnic University of Bari

- Representative of Department of Electrical and Information Engineering for disabled students

- Board of directors of the Regional Technological Cluster of Aerospace as representative for Polytechnic University of Bari

- Vice president of the Regional Mechatronic Cluster and Digital Innovation Hub Apulia

10.2   Professional jobs

Hereafter are reported main professional jobs:

- Reviewer of research projects for French National Research Agency in the Future Networks and Services (veRSo) Programme - ed. 2009

- Reviewer of research projects for the Italian Ministry of Education, University and Research in the PRIN (Projects of Relevant National Interest) Programme - ed. 2010/11 and 2012

- Tester for telematic services of the Port Community System (PCS) developed within the G.A.I.A. (Generalized Automatic exchange of port Information Area) project, at the Levante Port Authority

- Scientific supervisor of the annual research grant of 21.960,00 EUR by Eulogic s.r.l. for the activities of project DroMEP (Drones for Monitoring and Environmental Protection)

- Scientific supervisor of the research grant to the Computer Engineering research unit of Polytechnic University of Bari by the Commissioner of Italian Government for the urgent intervention of decontamination, ecologization and redevelopment of Taranto city

- Scientific supervisor of the research grant of 35.000,00 EUR by the cities of Barletta, Andria and Trani for activities supporting the executive planning within the project BATinnovation, in the initiative named "Patti per le Città"

- Scientific supervisor of the research grant of 35.380,00 EUR by the Abruzzo region (as managing authority of the IPA Adriatic Cross Border Cooperation Programme 2007-13) for devising the technical specification of further services of the prototypical information system NMSW-National Maritime Single Window named ARGES (under the umbrella of EASYCONNECTING project)

- Scientific co-supervisor of the research grant by the Regional Technological Cluster of Aerospace (Distretto Tecnologico Aerospaziale s.c.a.r.l.) for developing both software and control systems in the project aimed to develop and produce aeronautic engines for GE Avio s.r.l.

- Scientific supervisor of the research grant of 35.136,00 EUR by General Electric - Avio Aero Division s.r.l. for implementing a control system for a new family of turbojet engines by General Electric with specific reference to the development of avionic software for controlling and managing safety critical applications

- Scientific supervisor of the two-year research grant of 854.000,00 EUR by Fincons S.p.A. for the activities of the project named Smart Manufacturing Platform

- Responsible of the technical-scientific consultancy for the Italian Ministry of Infrastructures and Transportation - Headquarter of Italian Coastguard for studies, research and comparative analyses in the tender for acquiring services for design, development, enactment and management of the information system of National Maritime Single Window NMSW-PMIS

- Scientific supervisor of the two-year research grant of 109.800,00 EUR by LINKS Management and Technology S.p.A. for the activities of the project named "Nuovo Progetto"

- Scientific supervisor of the two-year research grant of 42.700,00 EUR by CLE (Computer Levante Engineering) s.r.l. for the activities of the project named SOPHIA (Operative Solutions for Healthcare through Artificial Intelligence)

- Scientific supervisor of the four-year research grant of 400.000,00 EUR by Telecom Italia S.p.A. for the activities of experimentation and support in the project of the Italian Ministry of Economic Development named "Bari-Matera 5G"

- Co-supervisor of the technical and scientific consultancy for Public Prosecutor office of Bari in the investigation of economic and financial collapse of Ferrovie del Sud Est e Servizi Automobilistici s.r.l.

- Reviewer for the call for proposals "Create a network around your research idea" by Polytechnic University of Turin

- Scientific supervisor of the two-year research grant of 64.840,00 EUR by ICAM s.r.l. for the activities of the project named I-GOIN

- Representative for Polytechnic University of Bari of research and study activities for Department of Information and Security (DIS) of the Italian Presidency of the Council of Ministers for actuating technical-scientific, educational and cultural initiatives devoted to improve cybersecurity in the Apulia region in favour of the overall national system

- Technical Advisory Board in the project INTER-PASS (Intermodal Passengers Connectivity between Ports and Airports), funded EU Interreg ADRION Programme

- Scientific supervisor of the two-year research grant of 650.000,00 EUR by Exprivia S.p.A. for the activities of the project named Digital Future

- Representative for Italian Ministry of Economic Development appointed by TIM-Fastweb-Huawei consortium for the social and economic evaluation of 5G technology in the applications of Bari-Matera experimental testbed

11   Other organizational activities

Nowadays I am also:

- Chairperson of Scientific Committee of I-3VLab (Italian Internet of Things Interoperability and Innovation Virtual Lab), Italian branch of the European network Interop-VLab focusing Internet of Things topics

- Componente del comitato paritetico di indirizzo delle attività di ricerca, sviluppo tecnologico e innovazione congiunte tra Politecnico di Bari e Consiglio Nazionale delle Ricerche

- Representative for Polytechnic University of Bari in the governing body of MA-RINE (Blue Growth Interdisciplinary Network for Apulia region)

- Member of the International Technical Working Group on IoT-Enabled Smart City Framework (initiative by ENEA, NIST (National Institute of Standards and Technology - U.S. Department of Commerce), ANSI (American National Standards Institute), ETSI (European Telecommunications Standards Institute), TIA (Telecommunications Industry Association), Fiware, MSIP (Ministry of Science, ICT and Future Planning - South Korea) and USGBC (U.S. Green Building Council)

- Member of the International Working Group on "Swarm-centric Systems" of NATO

- Member of the Teaching Observatory of Department of Electrical and Information Engineering of Polytechnic University of Bari (Professors-students' peer committee according to the provision of law 240/2010 under the art. 2 co. 2)

- Member of the scientific board of inter-university research center named "Industry 4.0", Apulian branch of the MedITech Competence Center within the national and international initiatives for Industry 4.0

- Co-supervisor of multidisciplinary research group Polytechnic University of Bari-Cancer Foundation Bari Giovanni Paolo II - IRCCS, for research and consultancy activities on topics of mutual interest

- Scientific co-supervisor of Digital Experience Laboratory (LED) established at Polytechnic University of Bari in cooperation with Microsoft Inc.

- Supervisor of the Echelon's Education Program for Polytechnic University of Bari

- Supervisor of the Oracle Academy Program for Polytechnic University of Bari

- Supervisor of the IBM Academic Initiative Program for Polytechnic University of Bari

- Member of the National Olympic Committee of the Italian Olympics on Computer Science (OII)

- Instructor at the Amazon Web Services Academy - curriculum "Cloud Computing Architecture" by Amazon.com Inc.

12   Tecnology transfer

I have obtained the following results of technology transfer from my research activity in terms of new enterprise creation (spin-off), consultancy agreements, development, exploitation and commercialization of patents and tools:

- I have been among founders of the **D.O.O.M. s.r.l.** (Data Over Ontological Models), an academic spin-off co-funded by the Basilicata region after the good ranking of the call Basilicata POR 2000-2006 Line III - Provision III.1.D.4. D.O.O.M. aimed to implement and sale results of research carried out in the Semantic Web field, and particularly of mobile and ubiquitous computing technologies

- I have participated to the spin-off **S.T.A.R.** (Semantic Technologies and Applied Research) of Polytechnic University of Bari for which I'm in charge within the Board of Directors as representative of Polytechnic University of Bari

13   Teaching

13.1   University courses

My teaching activity has started in the academic year 2003/04 and since then I have carried out university courses. At Polytechnic University of Bari:

- Operating Systems (6 ETCS) for Master degree of Telecommunication Engineering (A.Y. 2007-2008, 2008-2009, 2009-2010)

- Computer Science for Automation I (6 ETCS) for Master degree of Automation Engineering (A.Y. 2007-2008, 2008-2009, 2009-2010, 2010-2011)

- Telematics II (3 ETCS) for Master degree of Computer Engineering (A.Y. 2006-2007, 2007-2008, 2008-2009, 2010-2011)

- Telematics II (3 ETCS) for Master degree of Telecommunication Engineering (A.Y. 2006-2007, 2007-2008, 2008-2009, 2009-2010, 2010-2011)

- Basics of Computer Science (6 ETCS) for Master degree of Industrial Engineering (A.Y. 2009-2010)

- Computer Science for Automation - 2nd module: Operating Systems for Advanced Applications (6 ETCS) for Master degree of Automation Engineering (A.Y. 2010-2011)

- Operating Systems - 1st module (6 ETCS) for Bachelor degree of Electronic and Telecommunication Engineering - D.M. 270/04 (A.Y. 2011-2012)

- Operating Systems - 2nd module (6 ETCS) for Bachelor degree of Electronic and Telecommunication Engineering - D.M. 270/04 (A.Y. 2011-2012, 2012-2013)

- Computers and Telecommunication Networks - 2nd module: Application protocols (3 ETCS) for Bachelor degree of Computer and Automation Engineering - D.M. 270/04 (A.Y. 2011-2012)

- Computer Science for Automation - 1st module: Introduction to Operating Systems (6 ETCS) for Master degree of Automation Engineering - D.M. 270/04 (A.Y. 2011-2012, 2012-2013)

- Computer Science for Automation - 2nd module: Operating Systems for Advanced Applications (6 ETCS) for Master degree of Automation Engineering - D.M. 270/04 (A.Y. 2011-2012, 2012-2013)

- Basics of Operating Systems (6 ETCS) for Master degree of Automation Engineering - D.M. 270/04 (A.Y. 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018)

- Operating Systems for Advanced Applications (6 ETCS) for Master degree of Automation Engineering - D.M. 270/04 (A.Y. 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018)

- Basics of Operating Systems (6 ETCS) for Bachelor degree of Computer and Automation Engineering - D.M. 270/04 (A.Y. 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018, 2018-2019)

- Operating Systems for Advanced Applications (6 ETCS) for Bachelor degree of Computer and Automation Engineering - D.M. 270/04 (A.Y. 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018, 2018-2019)

- Web Languages and Technologies – Module Web oriented technologies and systems (6 ETCS) for Master degree of Computer Engineering - D.M. 270/04 (A.Y. 2016-2017, 2017-2018, 2018-2019)

- Programming Avionic Systems (6 ETCS) for Bachelor degree of Avionic Systems Engineering - D.M. 270/04 (A.Y. 2016-2017, 2017-2018, 2018-2019)

At University of Salento (Lecce):

- Embedded and Certified Software (6 ETCS) for Master degree of Aerospace Engineering - D.M. 270/04 (A.Y. 2017-2018, 2018-2019)

13.2   Masters and higher education courses

- *Basic technological elements and computer science for the digital broadcasting* within the project *Terrestrial digital platform for television services with high social impact* (PIT n.3) for COnsortium for Services in TElevision (CO.S.TE.)

- *Training to use Linux Operating System* in the National Operative Programme "Innovation PIA project - Local enterprises development" - Provision 2.1

- *Real time and embedded systems* in the Master of *Technological Advances in Mecathronics* organized by Polytechnic University of Bari (June 2007)

- *3D and immersive technologies* in the higher education course of *Network Software Specialist* held at Istituto di Istruzione Secondaria Superiore Amerigo Vespucci, Molfetta (February 2013)

- *Geo-referenced smartphone devices* in the higher education course of *Network Software Specialist* held at Istituto di Istruzione Secondaria Superiore Amerigo Vespucci, Molfetta (February 2013)

- *DBMS languages: SQL* in the higher education course of *Software Development Specialist* held at Centro Studi Levante, Molfetta (May 2013)

- *Databases and Information Systems design* in the higher education course of *Software Development Specialist* held at Centro Studi Levante, Molfetta (May 2013)

- *Analysis and Design Methods for Web-based Applications* in the higher education course of *Software Development Specialist* held at Centro Studi Levante, Molfetta (May 2013)

- *Operating Systems and Computer Networks* in the higher education course of *Web environments System Specialist* held at Centro di formazione professionale Programma Sviluppo, Bari (January 2014)

- *Development of a Web application* in the higher education course of *Software Development Specialist* held at Centro di Formazione ed Orientamento Professionale Don Tonino Bello, Andria (March 2014)

- *Java Programming* in the higher education course of *Software Development Specialist* held at Centro di Formazione ed Orientamento Professionale Don Tonino Bello, Andria (March 2014)

- *Analysis and Design Methods for Web-based Applications* in the higher education course of *Application software designer* held at Centro Studi Levante, Molfetta (May 2014)

13.3   Support to university courses

- Basics of Computer Science I for Master degree of Telecommunications Engineering (A.Y. 2003-2004)

- Basics of Computer Science I for Master degree of Computer Engineering (A.Y. 2004-2005)

- Operating Systems (O.O.) for Master degree of Computer Engineering (A.Y. 2004-2005)

- Operating Systems (N.O.) for Master degree of Computer Engineering (A.Y. 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, 2009-2010)

- Operating Systems (N.O.) for Master degree of Telecommunications Engineering (A.Y. 2004-2005, 2005-2006, 2006-2007)

- Computer Science for Automation I (N.O.) for Master degree of Automation Engineering (A.Y. 2004-2005, 2005-2006, 2006-2007)

I have also carried out supplementary teaching activity for the Information Systems course (Master degree of Computer Engineering, Electronics Engineering and Industrial Engineering) and for the Web Information Systems course at Computer Engineering Master degree.

I have been advisor or co-advisor of several Bachelor degree or Master degree thesis in disciplines I have taught or supported.

13.4   Ph.D.

I have carried out the following activities for Ph.D. courses:

Ph.D. advisory for the topics:

- XXV course: Knowledge representation methods for smart devices in intelligent buildings
- XXVII course: Machine learning methods for ubiquitous computing

- XXIX course: Object (b)logging: a semantic-based self-description for things networks in pervasive contexts
- XXIX course: A semantic-based bio-signal mining for sentiment analysis
- XXXII course: Object (b)logging: a semantic-based self-description in Cyber Physical Systems

Participation to the Academic Board of Ph.D in Electrical and Information Engineering of Polytechnic University of Bari and formerly of Ph.D. in Information Engineering

Participation to the Selection Board of Ph.D. in Electrical and Information Engineering of Polytechnic University of Bari

Participation to the Final Evaluation Board of several Ph.D courses in both Italian and foreign universities

Post-doc advisory for research projects assigning post-doctoral fellowships

14   References

14.1   International Journals

[1] A. Monaco, G. Sforza, N. Amoroso, M. Antonacci, R. Bellotti, M. de Tommaso, P. Di Bitonto, E. Di Sciascio, D. Diacono, E. Gentile, A. Montemurro, M. Ruta, A. Ulloa Severino, and S. Tangaro. The PERSON project: A serious brain-computer interface game for treatment in cognitive impairment. *Health and Technology*, 9(2):123–133, 2019. ISSN: 2190-7188, DOI: 10.1007/s12553-018-0258-y.

[2] M. Ruta, F. Scioscia, G. Loseto, A. Pinto, and E. Di Sciascio. Machine Learning in the Internet of Things: a Semantic-enhanced Approach. *Semantic Web*, 10(1):183–204, 2019. ISSN: 1570-0844, DOI: 10.3233/SW-180314.

[3] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. Social Internet of Things for Domotics: a Knowledge-based Approach over LDP-CoAP. *Semantic Web*, 9(6):781–802, 2018. ISSN: 1570-0844, DOI: 10.3233/SW-180299.

[4] M. Ruta, F. Scioscia, A. Pinto, F. Gramegna, S. Ieva, G. Loseto, and E. Di Sciascio. CoAP-based collaborative sensor networks in the Semantic Web of Things. *Journal of Ambient Intelligence and Humanized Computing*, 2018. in press, ISSN: 1868-5137, DOI: 10.1007/s12652-018-0732-4.

[5] D. De Venuto, V. F. Annese, G. Mezzina, F. Scioscia, M. Ruta, E. Di Sciascio, and A. Sangiovanni Vincentelli. A Mobile Health System for Neurocognitive Impairment Evaluation based on P300 Detection. *ACM Transactions on Cyber-Physical Systems*, 2(4), 2018. ISSN: 2378-962X, DOI: 10.1145/3140236.

[6] M. Ruta, F. Scioscia, F. Gramegna, S. Ieva, E. Di Sciascio, and R. Perez de Vera. A Knowledge Fusion Approach for Context Awareness in Vehicular Networks. *IEEE Internet of Things Journal*, 5(4):2407–2419, 2018. ISSN: 2327-4662, DOI: 10.1109/JIOT.2018.2815009.

[7] G. Capurso, M. Ruta, F. Scioscia, and E. Di Sciascio. Semantic Blockchain to Improve Scalability in the Internet of Things. *Open Journal of Internet Of Things (OJIOT) Special Issue: Proceedings of the International Workshop on Very Large*

Internet of Things (VLIoT 2017) in conjunction with VLDB 2017, 3(1):46–61, 2017. ISSN: 2364-7108, URN: urn:nbn:de:101:1-2017080613488.

[8] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. A semantic-enabled social network of devices for building automation. *IEEE Transactions on Industrial Informatics*, 13(6):3379–3388, 2017. ISSN: 1551-3203, DOI: 10.1109/TII.2017.2697907.

[9] D. De Venuto, V. F. Annese, M. Ruta, E. Di Sciascio, and A. Sangiovanni Vincentelli. Designing a Cyber-Physical System for Fall Prevention by Cortico-muscular Coupling Detection. *IEEE Design & Test*, 33(3):66–76, 2015. ISSN: 2168-2356, DOI: 10.1109/MDAT.2015.2480707.

[10] F. Scioscia, M. Ruta, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. A Mobile Matchmaker for the Ubiquitous Semantic Web. *International Journal on Semantic Web and Information Systems*, 10(4):77–100, 2014. ISSN: 1552-6283, DOI: 10.4018/ijswis.2014100104.

[11] M. Ruta, F. Scioscia, M. di Summa, S. Ieva, E. Di Sciascio, and M. Sacco. Semantic matchmaking for Kinect-based posture and gesture recognition. *International Journal of Semantic Computing*, 8(4):491–514, 2014. ISSN: 1793-7108, DOI: 10.1142/S1793351X14400169.

[12] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. Semantic-based resource discovery and orchestration in Home and Building Automation: a multi-agent approach. *IEEE Transactions on Industrial Informatics*, 10(1):730–741, 2014. ISSN: 1551-3203, DOI: 10.1109/TII.2013.2273433.

[13] M. Ruta, F. Scioscia, E. Di Sciascio, and G. Loseto. Semantic-based Enhancement of ISO/IEC 14543-3 EIB/KNX Standard for Building Automation. *IEEE Transactions on Industrial Informatics*, 7(4):731–739, 2011. ISSN: 1551-3203, DOI: 10.1109/TII.2011.2166792.

[14] M. Ruta, E. Di Sciascio, and F. Scioscia. Concept Abduction and Contraction in Semantic-based P2P Environments. *Web Intelligence and Agent Systems*, 9(3):179–207, 2011. ISSN: 1570-1263, DOI: 10.3233/WIA-2011-0214.

[15] M. Ruta, F. Scioscia, E. Di Sciascio, and G. Piscitelli. Semantic Matchmaking for Location-Aware Ubiquitous Resource Discovery. *International Journal On Advances in Intelligent Systems*, 4(3-4):113–127, 2011. ISSN: 1942-2679.

[16] M. Ruta, G. Zacheo, L.A. Grieco, T. Di Noia, G. Boggia, E. Tinelli, P. Camarda, and E. Di Sciascio. Semantic-based Resource Discovery, Composition and Substitution in IEEE 802.11 Mobile Ad Hoc Networks. *Wireless Networks*, 16(5):1223–1251, 2010. ISSN: 1022-0038, DOI: 10.1007/s11276-009-0199-5.

[17] M. Ruta, E. Di Sciascio, G. Piscitelli, and F. Scioscia. A Ubiquitous Knowledge-based System to Enable RFID Object Discovery in Smart Environments. *Pacific Asia Journal of the Association for Information Systems*, 2(3), 21–49 2010. ISSN: 1943-7544.

[18] M. Ruta, F. Scioscia, T. Di Noia, and E. Di Sciascio. A hybrid ZigBee/Bluetooth approach to mobile semantic grids. *Computer Systems Science and Engineering - Special issue on Mobile Data Management: Models, Methodologies and Services*, 25(3):235–249, 2010. ISSN: 0267-6192.

[19] T. Di Noia, E. Di Sciascio, F.M. Donini, M. Ruta, F. Scioscia, and E. Tinelli. Semantic-based Bluetooth-RFID interaction for advanced resource discovery in pervasive contexts. *International Journal on Semantic Web and Information Systems*, 4(1):50–74, 2008. ISSN: 1552-6283, DOI: 10.4018/jswis.2008010104.

[20] M. Ruta, T. Di Noia, E. Di Sciascio, and F.M. Donini. Semantic Based Collaborative P2P in Ubiquitous Computing. *Web Intelligence and Agent Systems*, 5(4):375–391, 2007. ISSN: 1570-1263.

[21] S. Colucci, T. Di Noia, A. Pinto, A. Ragone, M. Ruta, and E. Tinelli. A Non-Monotonic Approach to Semantic Matchmaking and Request Refinement in E-Marketplaces. *International Journal of Electronic Commerce (IJEC)*, 12(2):127–154, 2007. ISSN: 1086-4415, DOI: 10.2753/ JEC1086-4415120205.

[22] M. Ruta, T. Di Noia, E. Di Sciascio, F. Scioscia, and G. Piscitelli. If Objects Could Talk: A novel resource discovery approach for pervasive environments. *International Journal of Internet and Protocol Technology (IJIPT), Special issue on RFID: Technologies, Applications, and Trends*, 2(3/4):199–217, 2007. ISSN: 1743-8209, DOI: 10.1504/IJIPT.2007.016221.

[23] M. Ruta, T. Di Noia, E. Di Sciascio, and F.M. Donini. Semantic-Enhanced Bluetooth Discovery Protocol for M-Commerce Applications. *International Journal of Web and Grid Services*, 2(4):424–452, 2006. ISSN: 1741-1106, DOI: 10.1504/ IJWGS.2006.011713.

[24] D. Castelluccia, M. Mongiello, M. Ruta, and R. Totaro. WAVer: A Model Checking-based Tool to Verify Web Application Design. *Electronic Notes on Theoretical Computer Science*, 157(1):61–76, 2006. ISSN: 1571-0661, DOI: 10.1016/ j.entcs.2006.01.023.

[25] F.M. Donini, M. Mongiello, M. Ruta, and R. Totaro. A Model Checking-based Method for Verifying Web Application Design. *Electronic Notes on Theoretical Computer Science*, 151(2):19–32, 2006. ISSN: 1571-0661, DOI: 10.1016/ j.entcs.2005.07.034.

14.2   Edited Journals/Books/Proceedings

[26] S. Balandin, M. Ruta, and M. Miraoui, editors. *UBICOMM 2016: The Tenth International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies.* IARIA, 2016. ISBN: 978-1-61208-505-0.

[27] M. Ruta, M. Mega, E. Di Sciascio, and F. Scioscia, editors. *Proceedings of the International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2015), Bari - Italy, December 14th-15th, 2015.* Gelso Rosso s.r.l., 2015.

[28] M. Ruta, M. Mega, E. Di Sciascio, and F. Scioscia, editors. *Proceedings of the International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2014), Bari - Italy, July 15, 2014*, CEUR Workshop Proceedings. CEUR-WS, 2014.

[29] L. Yao, S.M. Sujith, and M. Ruta. The 3rd International Workshop on Internet of Ubiquitous and Pervasive Things (IUPT 2013) Preface. In E. Shakshuki, K. Djouani, M. Sheng, M. Younis, E. Vaz, and W. Groszko, editors, *Proceedings of the 4th International Conference on Ambient Systems, Networks and Technologies (ANT 2013), the 3rd International Conference on Sustainable Energy Information*

Technology (SEIT-2013), volume 19 of *Procedia Computer Science*, page 1129. Elsevier, 2013.

[30] K. Frank, C. Mastroianni, S. Balandin, J. Lee, A. Gordon-Ross, and M. Ruta. The 7th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2013) Preface. In W. Narzt and A. Gordon-Ross, editors, *Proceedings of UBICOMM 2013 - 7th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies*. International Academy, Research and Industry Association, IARIA, 2013.

[31] J.L Mauri, S. Manoharan, Z. Segal, Y. Taniguchi, R.S. Chang, K. Frank, C. Mastroianni, S. Balandin, J.S. Lee, A. Gordon Ross, and M. Ruta. The 6th international conference on mobile ubiquitous computing, systems, services and technologies (ubicomm 2012) foreword. In J.L. Mauri and P. Lorenz, editors, *Proceedings of UBICOMM 2012 - 6th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies*. International Academy, Research and Industry Association, IARIA, 2012. ISBN: 9781612082363.

[32] R. De Virgilio, E. Di Sciascio, and M. Ruta. Message from the SODM 2011 workshop chairs. In *MDM 2011: Proceedings of the 12th IEEE International Conference on Mobile Data Management - Workshops and Seminars, 6-9 June 2011, Luleå, Sweden*, volume 2, page XII. IEEE, 2011. ISBN: 978-1-4577-0581-6, DOI: 10.1109/MDM.2011.96.

14.3   International Book Chapters

[33] F. Scioscia, M. Ruta, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. Mini-ME matchmaker and reasoner for the Semantic Web of Things. In *Innovations, Developments, and Applications of Semantic Web and Information Systems*, pages 262–294. IGI Global, 2018. ISBN: 978-1-52255-042-6, DOI: 10.4018/978-1-5225-5042-6.ch010.

[34] F. Scioscia, M. Ruta, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. A Mobile Matchmaker for the Ubiquitous Semantic Web. In *Mobile Computing and Wireless Networks: Concepts, Methodologies, Tools, and Applications*, pages 994–1017. IGI Global, 2015. ISBN: 978-1-4666-8751-6, DOI: 10.4018/978-1-4666-8751-6.ch042.

[35] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. KNX, a worldwide standard protocol for home and building automation: state of the art and perspectives. In R. Zurawski, editor, *Industrial Communication Technology Handbook*, Industrial Information Technology, chapter 58, pages 1463–1481. CRC Press/Taylor & Francis, second edition, 2014. ISBN: 978-1-4822-0732-3.

[36] M. Ruta. Foreword. In Z. Luo, editor, *Smart Manufacturing Innovation and Transformation: Interconnection and Intelligence*, pages XVI–XVIII. IGI Global, 2013. ISBN: 978-1-4666-5836-3, DOI: 10.4018/978-1-4666-5836-3.

[37] M. Ruta, E. Di Sciascio, and F. Scioscia. RFID-enhanced Ubiquitous Knowledge Bases: framework and approach. In *Unique Radio Innovation for the 21st Century: Building Scalable and Global RFID Networks*, pages 229–255. Springer-Verlag, 2011. ISBN: 978-3-642-03461-9, DOI: 10.1007/978-3-642-03462-6_11.

[38] R. De Virgilio, E. Di Sciascio, M. Ruta, F. Scioscia, and R. Torlone. Semantic-based RFID Data Management. In *Unique Radio Innovation for the 21st Century:*

Building Scalable and Global RFID Networks, pages 111–141. Springer-Verlag, 2011. ISBN: 978-3-642-03461-9, DOI: 10.1007/978-3-642-03462-6_6.

[39] S. Colucci, T. Di Noia, A. Ragone, M. Ruta, U. Straccia, and E. Tinelli. Informative top-k retrieval for advanced skill management. In *Semantic Web Information Management - a model based perspective*, chapter 19, pages 449–476. Springer-Verlag, 2010. ISBN: 978-3-642-04328-4, DOI: 10.1007/978-3-642-04329-1_19.

[40] M. Ruta, F. Scioscia, S. Colucci, E. Di Sciascio, T. Di Noia, and A. Pinto. A knowledge-based framework for e-learning in heterogeneous pervasive environments. In *Multiplatform E-Learning Systems and Technologies: Mobile Devices for Ubiquitous ICT-Based Education*, chapter 2, pages 20–41. IGI Global, 2009. ISBN: 978-1-60566-703-4, DOI: 10.4018/978-1-60566-703-4.ch002.

[41] M. Ruta, T. Di Noia, E. Di Sciascio, F.M. Donini, and G. Piscitelli. Advanced Resource Discovery Protocol for Semantic-enabled M-commerce. In *Encyclopedia of Mobile Computing and Commerce (EMCC)*, pages 43–50. IGI Global, 2006. ISBN: 978-1-59904-002-8, DOI: 10.4018/ 978-1-60566-054-7.ch222.

14.4   International Conferences

[42] M. Gattullo, V. Dalena, A. Evangelista, A.E. Uva, M. Fiorentino, A. Boccaccio, M. Ruta, and J.L Gabbard. A context-aware technical information manager for presentation in augmented reality. In *26th IEEE Conference on Virtual Reality and 3D User Interfaces (VR 2019)*. IEEE, 2019. To appear.

[43] M. Ruta, F. Scioscia, F. Gramegna, I. Bilenchi, and E. Di Sciascio. Mini-ME Swift: the first OWL reasoner for iOS. In *16th Extended Semantic Web Conference (ESWC 2019)*, Lecture Notes in Computer Science, 2019. To appear.

[44] F. Scioscia, M. Ruta, and E. Di Sciascio. From Biosignals to Affective States: a Semantic Approach. In *2nd International Conference on Computational Biology and Bioinformatics (ICCBB 2018)*, pages 78–83. ACM, 2018. ISBN: 978-1-4503-6552-9, DOI: 10.1145/3290818.3290827.

[45] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. A journey from the Physical Web to the Physical Semantic Web. In *Companion Proceedings of the The Web Conference 2018*, CEUR Workshop Proceedings, pages 211–214. International World Wide Web Conferences Steering Committee, 2018. ISBN: 978-1-4503-5640-4, DOI: 10.1145/3184558.3186981.

[46] M. Ruta, F. Scioscia, S. Ieva, G. Capurso, and E. Di Sciascio. Supply Chain Object Discovery with Semantic-enhanced Blockchain. In *15th ACM Conference on Embedded Networked Sensor Systems (SenSys 2017)*. ACM, 2017. ISBN: 978-1-4503-5459-2, DOI: 10.1145/3131672.3136974.

[47] G. Capurso, M. Ruta, F. Scioscia, and E. Di Sciascio. Object (B)logging: Semantic Self-Description for Cyber-Physical Systems. In *Doctoral Consortium, Challenge, Industry Track, Tutorials and Posters International Joint Conference on Rules and Reasoning (RuleML+RR 2017)*, volume 1875 of *CEUR Workshop Proceedings*. CEUR-WS, 2017. ISSN: 1613-0073.

[48] G. Uva, M. Dassisti, F. Iannone, G. Florio, F. Maddalena, M. Ruta, L. A. Grieco, I. Giannoccaro, V. Albino, M. Lezoche, A. Aubry, A. Giovannini, A. Buscicchio, Y. Eslami, and V. Leggeri. Modelling Framework for Sustainable Co-management of Multi-purpose Exhibition Systems: The Fiera del Levante Case.

In *International High-Performance Built Environment Conference (iHBE 2016) – A Sustainable Built Environment Conference 2016 Series (SBE16)*, volume 180 of *Procedia Engineering*, pages 812–821. Elsevier, 2017. ISSN: 1877-7058, DOI: 10.1016/j.proeng.2017.04.242.

[49] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. Knowledge-based sensing/acting in mobile autonomous robots. In *2017 First IEEE International Conference on Robotic Computing*, pages 422–427. IEEE, 2017. ISBN: 978-1-5090-6724-4, DOI: 10.1109/IRC.2017.83.

[50] M. Ruta, F. Scioscia, S. Ieva, G. Loseto, F. Gramegna, A. Pinto, and E. Di Sciascio. Knowledge discovery and sharing in the IoT: the Physical Semantic Web vision. In *32nd ACM SIGAPP Symposium On Applied Computing*, pages 492–498. ACM, 2017. ISBN: 978-1-4503-4486-9, DOI: 10.1145/3019612.3019701.

[51] M. Ruta, F. Scioscia, A. Pinto, F. Gramegna, S. Ieva, G. Loseto, and E. Di Sciascio. Cooperative Semantic Sensor Networks for pervasive computing contexts. In *The 7th IEEE International Workshop on Advances in Sensors and Interfaces (IWASI 2017)*, pages 38–43. IEEE, 2018. ISBN: 978-1-5090-6707-0, DOI: 10.1109/IWASI.2017.7974209.

[52] M. Ruta, F. Scioscia, A. Pinto, F. Gramegna, S. Ieva, G. Loseto, and E. Di Sciascio. A CoAP-based framework for collaborative sensing in the Semantic Web of Things. In *7th International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2017)*, volume 109 of *Procedia Computer Science*, pages 1047–1052. Elsevier, 2017. ISSN: 1877-0509, DOI: 10.1016/j.procs.2017.05.425.

[53] M. Ruta, F. Scioscia, E. Di Sciascio, and I. Bilenchi. OWL API for iOS: early implementation and results. In *13th OWL: Experiences and Directions Workshop and 5th OWL reasoner evaluation workshop (OWLED - ORE 2016)*, volume 10161 of *Lecture Notes in Computer Science*, pages 141–152. Springer, 2016. ISBN: 978-3-319-54626-1, DOI: 10.1016/j.procs.2016.04.244.

[54] G. Loseto, S. Ieva, F. Gramegna, M. Ruta, F. Scioscia, and E. Di Sciascio. Linking the Web of Things: LDP-CoAP mapping. In *6th International Symposium on Internet of Ubiquitous and Pervasive Things (IUPT 2016)*, volume 83 of *Procedia Computer Science*, pages 1182–1187. Elsevier, 2016. ISSN: 1877-0509, DOI: 10.1016/j.procs.2016.04.244.

[55] G. Loseto, S. Ieva, F. Gramegna, M. Ruta, F. Scioscia, and E. Di Sciascio. Linked Data (in low-resource) Platforms: a mapping for Constrained Application Protocol. In *The Semantic Web - ISWC 2016: 15th International Semantic Web Conference, Proceedings, Part II*, volume 9982 of *Lecture Notes in Computer Science*, pages 131–139. Springer, 2016. ISBN: 978-3-319-46546-3, DOI: 10.1007/978-3-319-46547-0_14.

[56] G. Andria, E. Di Sciascio, A. M. Lazolla, A. Lay-Ekuakille, and M. Ruta. Kalman-Kriging Technique Applied to Space-aided Distributed Sensor System to Manage Critical Environmental Events. In *3rd IEEE International Workshop on Metrology for Aerospace*, pages 422–426. IEEE, 2016. ISBN: 978-1-4673-8292-2, DOI: 10.1109/MetroAeroSpace.2016.7573252.

[57] M. Ruta, S. Ieva, G. Loseto, and E. Di Sciascio. From the Physical Web to the Physical Semantic Web: Knowledge Discovery in the Internet of Things. In *Tenth International Conference on Mobile Ubiquitous Computing, Systems, Services and*

Technologies (UBICOMM 2016), pages 209–214. IARIA, 2016. ISBN: 978-1-61208-505-0.

[58] W. Ruan, Q. Z. Sheng, L. Yao, T. Gu, M. Ruta, and L. Shangguan. Device-free Indoor Localization and Tracking through Human-Object Interactions. In *17th International Symposium on a World of Wireless, Mobile and Multimedia Networks*, pages 1–9. IEEE, 2016. ISBN: 978-1-5090-2185-7, DOI: 10.1109/WoW-MoM.2016.7523524.

[59] D. De Venuto, V. F. Annese, G. Mezzina, M. Ruta, and E. Di Sciascio. Brain-Computer Interface using P300: A Gaming Approach for Neurocognitive Impairment Diagnosis. In *18th IEEE International High-Level Design Validation and Test Workshop*, pages 93–99. IEEE, 2016. ISBN: 978-1-5090-4270-8, DOI: 10.1109/HLDVT.2016.7748261.

[60] M. Ruta, F. Scioscia, E. Bove, A. Cinquepalmi, and E. Di Sciascio. A Semantic-based Approach for Resource Discovery and Allocation in Distributed Middleware. In *Proceedings of the Posters and Demos Session of the 17th International Middleware Conference*, pages 21–22. ACM, 2016. ISBN: 978-145034666-5, DOI: 10.1145/3007592.3007604.

[61] G. Andria, E. Di Sciascio A. M. Lanzolla, M. Ruta, and S. Cacucci. Metrological Characterization and Semantic Annotation of Space-aided Distributed Sensor System for Hydrogeological Disaster Management. In *SET-222 Specialists' Meeting on Swarm Centric Solution for Intelligent Sensor Networks*, pages 13.1–13.8. NATO Science and Technology Organization, 2016. ISBN: 978-92-837-2047-8, DOI: 10.14339/STO-MP-SET-222-13-PDF.

[62] M. Ruta, F. Scioscia, E. Bove, A. Cinquepalmi, and E. Di Sciascio. A CoAP-based framework for collaborative sensing in the Semantic Web of Things. In *SET-222 Specialists' Meeting on Swarm Centric Solution for Intelligent Sensor Networks*, pages 16.1–16.12. NATO Science and Technology Organization, 2016. ISBN: 978-92-837-2047-8, DOI: 10.14339/STO-MP-SET-222-16-PDF.

[63] M. Ruta, F. Scioscia, S. Ieva, D. De Filippis, and E. Di Sciascio. Indoor/outdoor mobile navigation via knowledge-based POI discovery in augmented reality. In *2015 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)*, pages 26–30. IEEE, 2015. ISBN: 978-1-4673-9618-9, DOI: 10.1109/WI-IAT.2015.243.

[64] M. Ruta, E. Di Sciascio, A. Pinto, F. Gramegna, and A. Cinquepalmi. ANDROMEDA: Adriatic IoNian and MeDiterRanean AuthOrities for Maritime SurvEillance anD Coastal and Maritime Tourism. In *Proceedings of the International Workshop Toward Emerging Technology for Harbour sYstems and Services (TETHYS 2015)*. Gelso Rosso s.r.l., 2015.

[65] F. Scioscia, M. Ruta, and E. Di Sciascio. A swarm of Mini-MEs: reasoning and information aggregation in ubiquitous multi-agent contexts. In *4th OWL Reasoner Evaluation Workshop (ORE 2015)*, volume 1207 of *CEUR Workshop Proceedings*, pages 15–22. CEUR-WS, 2015. ISSN: 1613-0073.

[66] A. Pinto, F. Scioscia, G. Loseto, M. Ruta, E. Bove, and E. Di Sciascio. A semantic-based approach for Machine Learning data analysis. In *Ninth IEEE International Conference on Semantic Computing (ICSC 2015)*, pages 324–327. IEEE, 2015. ISBN: 978-1-4799-7935-6, DOI: 10.1109/ICOSC.2015.7050828.

[67] M. Ruta, F. Scioscia, and E. Di Sciascio. A mobile matchmaker for resource discovery in the Ubiquitous Semantic Web. In *4th IEEE International Conference on Mobile Services (MS 2015)*, pages 336–343. IEEE, 2015. ISBN: 978-1-4673-7283-1, DOI: 10.1109/MobServ.2015.76.

[68] M. Ruta, G. Loseto, S. Tegas, G. Bianco, F. Scioscia, and E. Di Sciascio. Try to predict grid faults: a dynamic, semantic-based and multi-dimensional approach. In *CIRED Workshop 2014 "Challenges of Implementing Active Distribution System Management"*, 2014.

[69] M. Ruta, F. Scioscia, D. De Filippis, S. Ieva, M. Binetti, and E. Di Sciascio. A semantic-enhanced augmented reality tool for OpenStreetMap POI discovery. In *17th Meeting of the EURO Working Group on Transportation (EWGT 2014)*, volume 3 of *Transportation Research Procedia*, pages 479–488. Elsevier, 2014. ISSN: 2352-1465, DOI: 10.1016/j.trpro.2014.10.029.

[70] M. Ruta, F. Scioscia, M. di Summa, S. Ieva, E. Di Sciascio, and M. Sacco. Semantic matchmaking for Kinect-based posture and gesture recognition. In *8hth IEEE International Conference on Semantic Computing (ICSC 2014)*, pages 15–22. IEEE, 2014. ISBN: 978-1-4799-4002-8, DOI: 10.1109/ICSC.2014.28.

[71] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, S. Ieva, and E. Di Sciascio. Mini-ME 2.0: powering the Semantic Web of Things. In *3rd OWL Reasoner Evaluation Workshop (ORE 2014)*, volume 1207 of *CEUR Workshop Proceedings*, pages 8–15. CEUR-WS, 2014. ISSN: 1613-0073.

[72] H.A. Khattak, M. Ruta, and E. Di Sciascio. CoAP-based Healthcare Sensor Networks: a survey. In *The 11th International Bhurban Conference on Applied Sciences & Technology (IBCAST 2014)*, pages 499–503. IEEE, 2014. ISBN: 978-1-4799-2319-9, DOI: 10.1109/IBCAST.2014.6778196.

[73] M. Ruta, F. Scioscia, M. di Summa, S. Ieva, E. Di Sciascio, and M. Sacco. Body posture recognition as a discovery problem: a semantic-based framework. In *The 2014 International Conference on Active Media Technology (AMT 2014)*, volume 8610 of *Lecture Notes in Computer Science*, pages 160–173. Springer, 2014. ISBN: 978-3-319-09911-8, DOI: 10.1007/978-3-319-09912-5.

[74] M. Ruta, F. Scioscia, A. Pinto, E. Di Sciascio, F. Gramegna, S. Ieva, and G. Loseto. Resource annotation, dissemination and discovery in the Semantic Web of Things: a CoAP-based framework. In *IEEE International Conference on Internet of Things (iThings 2013)*, pages 527–534. IEEE, 2013. DOI: 10.1109/GreenCom-iThings-CPSCom.2013.103.

[75] F. Scioscia, M. Binetti, M. Ruta, S. Ieva, and E. Di Sciascio. A Framework and a Tool for Semantic Annotation of POIs in OpenStreetMap. In *16th Meeting of the EURO Working Group on Transportation (EWGT 2013)*, volume 111 of *Procedia - Social and Behavioral Sciences*, pages 1092–1101. Elsevier, 2014. ISSN = 1877-0428, DOI: 10.1016/j.sbspro.2014.01.144.

[76] M. Ruta, F. Scioscia, E. Di Sciascio, D. Rotondi, and S. Piccione. Semantic-based Knowledge Dissemination and Extraction in Smart Environments. In *International Workshop on Pervasive Internet of Things and Smart Cities (PITSaC-2013). In proceedings of the 27th International Conference on Advanced Information Networking and Applications Workshops (WAINA 2013)*, pages 1289–1294. IEEE, 2013. ISBN:978-1-4673-6239-9, DOI: 10.1109/WAINA.2013.249.

[77] M. Ruta, F. Scioscia, S. Ieva, G. Loseto, and E. Di Sciascio. Semantic Annotation of OpenStreetMap Points of Interest for Mobile Discovery and Navigation. In *1st IEEE International Conference on Mobile Services (MS 2012)*, pages 33–39. IEEE, 2012. ISBN: 978-1-4673-2881-4, DOI: 10.1109/MobServ.2012.17.

[78] M. Ruta, F. Scioscia, E. Di Sciascio, F. Gramegna, and G. Loseto. Mini-ME: the Mini Matchmaking Engine. In *1st International Workshop on OWL Reasoner Evaluation (ORE 2012)*, volume 858, pages 52–63. CEUR-WS, 2012. ISSN: 1613-0073.

[79] M. Ruta, F. Scioscia, and E. Di Sciascio. Enabling the Semantic Web of Things: framework and architecture. In *6th IEEE International Conference on Semantic Computing (ICSC 2012)*, pages 345–347. IEEE, 2012. ISBN: 978-1-4673-4433-3, DOI: 10.1109/ICSC.2012.42.

[80] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. An Agent Framework for Knowledge-based Homes. In *3rd International Workshop on Agent Technologies for Energy Systems (ATES 2012). In proceedings of the 11th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2012)*, pages 27–34. IFAAMAS, 2012.

[81] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, and E. Di Sciascio. A Mobile Reasoner for Semantic-based Matchmaking. In *6th International Conference on Web Reasoning and Rule Systems (RR 2012)*, volume 7497 of *Lecture Notes in Computer Science*, pages 254–257. Springer-Verlag, 2012. ISBN: 978-3-642-33202-9, ISSN: 0302-9743, DOI: 10.1007/978-3-642-33203-6_27.

[82] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, A. Pinto, S. Ieva, and E. Di Sciascio. A logic-based CoAP extension for resource discovery in semantic sensor networks. In *5th International Workshop on Semantic Sensor Networks*, volume 904, pages 17–32. CEUR-WS, 2012. ISSN: 1613-0073.

[83] M. Ruta, F. Scioscia, E. Di Sciascio, and D. Rotondi. Ubiquitous Knowledge Bases for the Semantic Web of Things. In *First Internet of Things International Forum*, 2011.

[84] M. Ruta, F. Scioscia, E. Di Sciascio, and G. Loseto. A semantic-based evolution of EIB Konnex protocol standard. In *IEEE International Conference on Mechatronics (ICM 2011)*, pages 773–778. IEEE, 2011. ISBN: 978-1-61284-982-9, DOI: 10.1109/ICMECH.2011.5971219.

[85] M. Ruta, S. Colucci, F. Scioscia, E. Di Sciascio, and F.M. Donini. Finding Commonalities in RFID Semantic Streams. In *5th International Workshop on RFID Technology - Concepts, Applications, Challenges (IWRT 2011). In proceedings of the 2nd International Conference on Ambient Systems, Networks and Technologies (ANT 2011) and the 8th International Conference on Mobile Web Information Systems (MobiWIS 2011)*, volume 5 of *Procedia Computer Science*, pages 857–864. Elsevier, 2011. ISSN: 1877-0509, DOI: 10.1016/j.procs.2011.07.118.

[86] E. Tinelli, F.M. Donini, M. Ruta, and E. Di Sciascio. Reasoning in resource-constrained environments: a matchmaking engine over relational Knowledge Bases. In *24th International Workshop on Description Logics (DL 2011)*, volume 745 of *CEUR Workshop Proceedings*, pages 576–586. CEUR-WS, 2011. ISSN: 1613-0073.

[87] M. Ruta, F. Scioscia, S. Ieva, and E. Di Sciascio. $T^2.O.M.$ $T.O.M.$: Techniques and Technologies for an Ontology-based Mobility Tool with Open Maps. In

2nd International Workshop on Semantic Web Information Management (SWIM 2010). In proceedings of the 10th International Conference on Web Engineering (ICWE 2010), volume 6385 of *Lecture Notes in Computer Science*, pages 199–210. Springer-Verlag, 2010. ISBN: 978-3-642-16985-4, ISSN: 0302-9743, DOI: 10.1007/978-3-642-16985-4_18.

[88] M. Ruta, F. Scioscia, E. Di Sciascio, F. Gramegna, S. Ieva, and G. Loseto. RFID-assisted product delivery in sustainable supply chains: a knowledge-based approach. In *4th International Workshop on RFID Technology - Concepts, Applications, Challenges (IWRT 2010)*, pages 3–15. SciTePress, 2010. ISBN: 978-989842511-9, DOI: 10.1007/978-3-642-13486-9_2.

[89] M. Ruta, F. Scioscia, and E. Di Sciascio. Mobile Semantic-based Matchmaking: a fuzzy DL approach. In *7th Extended Semantic Web Conference (ESWC 2010)*, volume 6088 of *Lecture Notes in Computer Science*, pages 16–30. Springer-Verlag, 2010. ISBN: 978-3-642-13485-2, ISSN: 0302-9743, DOI: 10.1007/978-3-642-13486-9_2.

[90] M. Ruta, F. Scioscia, E. Di Sciascio, and G. Piscitelli. Location-Based Semantic Matchmaking In Ubiquitous Computing. In *2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, volume 3, pages 124–127. IEEE/WIC/ACM, 2010. ISBN: 978-0-7695-4191-4, DOI: 10.1109/WI-IAT.2010.300.

[91] M. Ruta, F. Scioscia, F. Gramegna, and E. Di Sciascio. A Mobile Knowledge-Based System for On-Board Diagnostics and Car Driving Assistance. In *4th International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2010)*, pages 91–96. IARIA, 2010. ISBN: 978-1-61208-000-0.

[92] M. Ruta, F. Scioscia, E. Di Sciascio, and G. Piscitelli. Semantic-based Geographical Matchmaking in Ubiquitous Computing. In *4th International Conference on Advances in Semantic Processing (SEMAPRO 2010)*, pages 166–172. IARIA, 2010. ISBN: 978-1-61208-000-0, Best Paper Award.

[93] M. Ruta, F. Scioscia, E. Di Sciascio, and C. Scioscia. A knowledge-based RFID framework enabling decision support for healthcare. In *IEEE International Symposium on Industrial Electronics (ISIE 2010)*, pages 1983–1988. IEEE, 2010. ISBN: 978-1-4244-6390-9, DOI: 10.1109/ ISIE.2010.5637492.

[94] A. Ragone, M. Ruta, E. Di Sciascio, and F.M. Donini. Bargaining agents in wireless contexts: an alternating-offers protocol for multi-issue bilateral negotiation in mobile marketplaces. In *10th International Conference on Electronic Commerce and Web Technologies (EC-Web 2009)*, LNCS (Lecture Notes in Computer Science), pages 14–25. Springer Verlag, 2009. ISBN: 978-3-642-03963-8, ISSN: 0302-9743, DOI: 10.1007/978-3-642-03964-5_3.

[95] F. Scioscia and M. Ruta. Building a Semantic Web of Things: issues and perspectives in information compression. In *Semantic Web Information Management (SWIM 2009). In proceedings of the 3rd IEEE International Conference on Semantic Computing (ICSC 2009)*, pages 589–594. IEEE, 2009. ISBN: 978-0-7695-3800-6, DOI: 10.1109/ICSC.2009.75.

[96] M. Ruta, G. Zacheo, L.A. Grieco, T. Di Noia, G. Boggia, E. Tinelli, P. Camarda, and E. Di Sciascio. Semantic-enabled Resource Discovery, Composition and Substitution in 802.11 Pervasive Environments. In *3rd IEEE International Conference*

on Semantic Computing (ICSC 2009), pages 503–508. IEEE, 2009. ISBN: 978-0-7695-3800-6, DOI: 10.1109/ICSC. 2009.77.

[97] M. Ruta, F. Scioscia, T. Di Noia, and E. Di Sciascio. Reasoning in Pervasive Environments: an Implementation of Concept Abduction with Mobile OODBMS. In *2009 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, pages 145–148. IEEE, 2009. ISBN: 978-0-7695-3801-3, DOI: 10.1109/WI-IAT.2009.29.

[98] M. Ruta, F. Scioscia, T. Di Noia, E. Di Sciascio, and G. Piscitelli. Ubiquitous Knowledge-based Framework for RFID Semantic Discovery in Smart U-Commerce Environments. In *11th International conference on Electronic Commerce (ICEC 2009)*, pages 9–18. ACM, 2009. ISBN: 978-1-60558-586-4, DOI: 10.1145/1593254.1593257.

[99] M. Ruta, F. Scioscia, T. Di Noia, and E. Di Sciascio. RFID-based semantic-enhanced ubiquitous decision support system for healthcare. In *3rd International Workshop on RFID Technology - Concepts, Applications, Challenges (IWRT 2009)*, pages 79–90. INSTICC Press, 2009. ISBN: 978-989-8111-94-4, DOI: 10.5220/0002203500790088.

[100] E. Tinelli, A. Cascone, M. Ruta, T. Di Noia, E. Di Sciascio, and F.M. Donini. I.M.P.A.K.T.: an innovative, semantic-based skill management system exploiting standard SQL. In *11th International Conference on Enterprise Information Systems (ICEIS 2009)*, pages 224–229. INSTICC Press, 2009. ISBN: 978-989-8111-85-2.

[101] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. Match'n'Date: Semantic Matchmaking for Mobile Dating in P2P Environments. In *2nd International Workshop on Service Matchmaking and Resource Retrieval in the Semantic Web (SMR2 2008)*, volume 416, pages 83–97. CEUR-WS, 2008. ISSN: 1613-0073.

[102] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. Abduction and Contraction for Semantic-based Mobile Dating in P2P Environments. In *2008 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, pages 626–632. IEEE, 2008. ISBN: 978-0-7695-3496-1, DOI: 10.1109/WIIAT.2008.413.

[103] M. Ruta, T. Di Noia, E. Di Sciascio, G. Piscitelli, and F. Scioscia. A semantic-enabled mobile directory service for RFID-based logistics applications. In *2008 IEEE International Conference on e-Business Engineering (ICEBE 2008)*, pages 333–340. IEEE, 2008. ISBN: 978-0-7695-3395-7, DOI: 10.1109/ICEBE.2008.110.

[104] M. Ruta, T. Di Noia, E. Di Sciascio, G. Piscitelli, and F. Scioscia. A semantic-based mobile registry for dynamic RFID-based logistics support. In *10th International Conference on Electronic Commerce (ICEC 2008)*, volume 342, pages 27–35. ACM, 2008. ISBN: 978-1-60558-075-3, DOI: 10.1145/1409540.1409576.

[105] M. Ruta, T. Di Noia, E. Di Sciascio, M. Paolucci, F. Scioscia, and E. Tinelli. A Semantic-based Registry enabling Discovery, Composition and Substitution of Pervasive Services. In *7th International ACM Workshop on Data Engineering for Wireless and Mobile Access (MobiDE 2008)*, pages 63–70. ACM, 2008. ISBN: 978-1-60558-221-4, DOI: 10.1145/1626536.1626548.

[106] M. Ruta, T. Di Noia, E. Di Sciascio, F. Scioscia, and E. Tinelli. A ubiquitous knowledge-based system to enable RFID object discovery in smart environments. In *2nd International Workshop on RFID Technology - Concepts, Applications,*

Challenges (IWRT 2008), pages 87–100. INSTICC Press, 2008. ISBN: 978-989-8111-46-3.

[107] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. A semantic-based fully visual application for context-aware matchmaking and request refinement in ubiquitous computing. In *International Conference on Computational Science and its Applications (ICCSA 2008)*, volume 5073 of *Lecture Notes in Computer Science*, pages 259–274. Springer Verlag, 2008. ISBN: 978-3-540-69840-1, DOI: 10.1007/978-3-540-69848-7_22.

[108] M. Ruta, T. Di Noia, E. Di Sciascio, and F.M. Donini. m-jUDDI+: a Semantic-enabled Service Registry for Discovery, Composition and Substitution in Pervasive Environments. In *1st International Workshop on OWL-S - Experiences and Directions. Co-located with the 4th European Semantic Web Conference (ESWC 2007)*, pages 18–31, 2007.

[109] M. Ruta, T. Di Noia, E. Di Sciascio, G. Piscitelli, and F. Scioscia. RFID meets Bluetooth in a semantic based u-commerce environment. In *9th International conference on Electronic Commerce (ICEC 2007)*, pages 107–116. ACM, 2007. ISBN: 978-1-59593-700-1, DOI: 10.1145/1282100. 1282124, Best Paper Award.

[110] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. If Objects Could Talk: Semantic-enhanced Radio-Frequency IDentification. In *1st International Workshop on RFID Technology - Concepts, Applications, Challenges (IWRT 2007)*, pages 25–34. INSTICC Press, 2007. ISBN: 978-989-8111-01-2.

[111] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. An efficient data compression algorithm for semantic-based ubiquitous computing applications. In *International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2007)*, pages 177–182. IEEE, 2007. ISBN: 978-0-7695-2993-6, DOI: 10.1109/UBICOMM.2007.33.

[112] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. Integrating Radio Frequency Object Discovery and Bluetooth for Semantic-based M-commerce. In *International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM 2007)*, pages 95–100. IEEE, 2007. ISBN: 978-0-7695-2993-6, DOI: 10.1109/UBICOMM.2007.32.

[113] M. Binetti, P. Amoruso, E. Di Sciascio, M. Ruta, and A. Pinto. Towards Mobile Semantic Grid for Infomobility. In *11th Meeting of the EURO Working Group on Transportation (EWGT 2006)*, pages 890–895, 2006. ISBN: 88-901798-2-1.

[114] M. Ruta, T. Di Noia, E. Di Sciascio, and G. Piscitelli. Ontology driven resource discovery in a Bluetooth based m-marketplace. In *3rd IEEE International Workshop on Mobile Commerce and Wireless Services (WMCS 2006)*, pages 478–485. IEEE, 2006. ISBN: 0-7695-2511-3, DOI: 10.1109/CEC-EEE.2006.66.

[115] M. Ruta, T. Di Noia, E. Di Sciascio, and F.M. Donini. Semantic enabled Resource Discovery, Composition and Substitution in Pervasive Environments. In *13th IEEE Mediterranean Electrotechnical Conference*, pages 754–760. IEEE, 2006. ISBN: 1-4244-0087-2, DOI: 10.1109/MELCON.2006.1653209.

[116] M. Ruta, T. Di Noia, E. Di Sciascio, F.M. Donini, and G. Piscitelli. Semantic Based Collaborative P2P in Ubiquitous Computing. In *2005 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology*, pages 143–149. IEEE, 2005. ISBN: 0-7695-2415-X, DOI: 10.1109/WI.2005.130.

14.5   National Conferences

[117] M. Ruta, F. Scioscia, G. Loseto, G. Capurso, A. Pinto, and E. Di Sciascio. Semantic Web of Things: dalla rappresentazione degli oggetti alla decisione automatica. In *Ital-IA 2019 - Convegno Nazionale CINI sull'Intelligenza Artificiale*, 2019.

[118] M. Ruta, F. Scioscia, F. Gramegna, S. Ieva, I. Bilenchi, and E. Di Sciascio. Reti veicolari basate sulla rappresentazione della conoscenza. In *Ital-IA 2019 - Convegno Nazionale CINI sull'Intelligenza Artificiale*, 2019.

[119] F. Scioscia, G. Loseto, S. Ieva, F. Gramegna, A. Pinto, Serena De Siati, M. Ruta, and E. Di Sciascio. The Physical Semantic Web for knowledge-based M2M interactions in precision agriculture. In *4th Italian Conference on ICT for Smart Cities And Communities (I-CiTies 2018)*, 2018.

[120] M. Ruta, F. Scioscia, G. Loseto, F. Gramegna, S. Ieva, A. Pinto, and E. Di Sciascio. Semantic-based Social Intelligence through Multi-Agent Systems. In *19th Workshop from Objects to Agents (WOA 2018)*, volume 2215 of *CEUR Workshop Proceedings*, pages 96–102. CEUR-WS, 2018. ISSN: 1613-0073.

[121] M. Ruta, F. Scioscia, S. Ieva, G. Capurso, A. Pinto, and E. Di Sciascio. A Blockchain Infrastructure for the Semantic Web of Things. In *26th Italian Symposium on Advanced Database Systems (SEBD 2018)*, volume 2161 of *CEUR Workshop Proceedings*. CEUR-WS, 2018. ISSN: 1613-0073.

[122] G. Boggia, L.A. Grieco, C. Guaragnella, M. Ruta, M. Forzani, F. Nicassio, V. Simone, M. Mussini, and G. Parladori. IT and Optical Network Orchestration Framework - An Industrial Research Project. In *20th Italian National Conference on Photonic Technologies (FOTONiCA 2018)*, IET Digital Library. IET, 2018.

[123] M. Ruta, F. Scioscia, S. Ieva, G. Capurso, G. Loseto, F. Gramegna, A. Pinto, and E. Di Sciascio. Semantic-enhanced blockchain technology for smart cities and communities. In *3rd Italian Conference on ICT for Smart Cities And Communities (I-CiTies 2017)*, 2017.

[124] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. Toward Wise Cities: a knowledge-based approach for home and building resilience. In *2rd Italian Conference on ICT for Smart Cities And Communities (I-CiTies 2016)*, 2016.

[125] M. Ruta, F. Scioscia, A. Cinquepalmi, S. Cipriani, and E. Di Sciascio. Dai biosegnali agli stati emotivi: un approccio semantico. In *XVI Convegno Nazionale Associazione Italiana Ingegneri Clinici (AIIC 2016)*, 2016.

[126] M. Ruta, F. Scioscia, S. Ieva, D. De Filippis, and E. Di Sciascio. Ontology-driven car pooling via semantic matchmaking: a context-aware approach. In *1st Italian Conference on ICT for Smart Cities And Communities (I-CiTies 2015)*, 2015.

[127] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. A semantic-based framework for energy management in Home and Building Automation scenarios. In *Energyhome University Day 2015*, 2015.

[128] G. Abbatantuono, G. Acciani, F. Adamo, V. Amoruso, F. Attivissimo, G. Boggia, M. Bronzini, S. Bruno, L. Carnimeo, M. Carpentieri, G. Cavone, P. Camarda, G. Cofano, A. Covitti, A. Dell'Aquila, G. Dellino, D. De Santis, A. Di Nisio, E. Di Sciascio, L. A. Grieco, S. Lamonaca, M. La Scala, G. Loseto, S. Mascolo, R. A. Mastromauro, C. Meloni, A. Naschetti, G. Piro, M. Ruta, N. Salvatore,

M. Savino, R. Sbrizzai, F. Scioscia, M. Spadavecchia, S. Stasi, U. Stecchi, D. Stric-coli, A. Trotta, and S. Vergura. Findings from the RES NOVAE Project: new scenarios, devices and applications for smart grids and active distribution grids. In *Proceedings of 1st Workshop on the State of the Art and Challenges of Research Efforts at Politecnico di Bari)*, volume A, pages 253–263. Gangemi, 2014. ISBN: 978-88-492-2969-1.

[129] C. Cosola, A. Iannelli, G. Dalfino, D. Saulle, V. Rossano, T. Roselli, A. Pinto, M. Ruta, P. Di Bitonto, V. Gioviale, N. Mastrofilippo, L. Procino, M. Iacoviello, R. Corciulo, and L. Gesualdo. UBI-CARE (UBIquitous knowledge-oriented social framework for continuing healthCARE): Un modello innovativo di social network-ing per la gestione del paziente in remoto, per la formazione continua e la riduzione della spesa sanitaria. In *54-esimo Congresso Nazionale SIN*, 2013.

[130] G. Loseto, M. Ruta, F. Scioscia, E. Di Sciascio, and M. Mongiello. Mining the user profile from a smartphone: a multimodal agent framework. In *14th Workshop From Objects to Agents (WOA 2013) co-located with the 13th Conference of the Italian Association for Artificial Intelligence (AI*IA 2013)*, volume 1099, pages 47–53. CEUR-WS, 2013. ISSN: 1613-0073.

[131] M. Ruta, F. Scioscia, G. Loseto, and E. Di Sciascio. Knowledge representation methods for intelligent buildings and smart cities. In *2nd Green City Energy Forum*, 2013.

[132] F. Gramegna, S. Ieva, G. Loseto, M. Ruta, F. Scioscia, and E. Di Sciascio. A Lightweight Matchmaking Engine for the Semantic Web of Things. In *21th Italian Symposium on Advanced Database Systems (SEBD 2013)*, pages 103–114, 2013. ISBN: 978-1-62993-949-0.

[133] P. Di Bitonto, E. Di Sciascio, T. Roselli, M. Ruta, and A. Ulloa Severino. UBI-CARE: ubiquitous learning per medici e pazienti. In *DIDAMATICA - Informatica per la didattica - edizione 2012*, 2012. ISBN: 978-88-905406-7-7.

[134] G. Loseto, F. Scioscia, M. Ruta, and E. Di Sciascio. Semantic-based Smart Homes: a Multi-Agent Approach. In *13th Workshop on Objects and Agents (WOA 2012)*, volume 892 of *CEUR Workshop Proceedings*, pages 49–55. CEUR-WS, 2012. ISSN: 1613-0073.

[135] G. Loseto and M. Ruta. Knowledge Representation Methods for Smart Devices in Intelligent Buildings. In *12th AI*IA Symposium on Artificial Intelligence - Doctoral Consortium*, volume 926 of *CEUR Workshop Proceedings*, pages 18–22. CEUR-WS, 2012. ISSN: 1613-0073.

[136] A. Pinto, E. Di Sciascio, and M. Ruta. Machine Learning Methods and Technolo-gies for Ubiquitous Computing. In *12th AI*IA Symposium on Artificial Intelli-gence - Doctoral Consortium*, volume 926 of *CEUR Workshop Proceedings*, pages 38–42. CEUR-WS, 2012. ISSN: 1613-0073.

[137] M. Ruta, F. Scioscia, F. Gramegna, G. Loseto, and E. Di Sciascio. Knowledge-based Real-Time Car Monitoring and Driving Assistance. In *20th Italian Sym-posium on Advanced Databases Systems (SEBD 2012)*, pages 289–294. Edizioni Libreria Progetto, 2012. ISBN: 978-88-96477-23-6.

[138] E. Di Sciascio, M. Ruta, F. Scioscia, and E. Tinelli. Querying Compressed Knowl-edge Bases in Pervasive Computing. In *19th Italian Symposium on Advanced Database Systems (SEBD 2011)*, pages 119–130, 2011.

[139] M. Ruta, F. Scioscia, and E. Di Sciascio. Non-standard inference services for mobile computing: concept abduction via m-OODBMS. In *18th Italian Symposium on Advanced Database Systems (SEBD 2010)*, pages 210–221. Esculapio, 2010. ISBN: 978-88-7488-369-1.

[140] M. Ruta, T. Di Noia, E. Di Sciascio, and F. Scioscia. Semantic-enhanced EPC-global Radio-Frequency IDentification. In *4th Italian Workshop on Semantic Web Applications and Perspectives (SWAP 2007)*, volume 314, pages 231–240. CEUR-WS, 2007. ISSN: 1613-0073, ISBN: 978-88-902981-1-0.

[141] M. Ruta, G. Piscitelli, T. Di Noia, E. Di Sciascio, and F.M. Donini. Semantic based service discovery in ubiquitous computing. In *XLIII Congresso Associazione Italiana per il Calcolo Automatico (AICA 2005)*, pages 179–188, 2005.

14.6   Ph.D. thesis

[142] M. Ruta. *Knowledge Representation and Management Methods for Mobile Systems and Contexts.* PhD thesis, Polytechnic University of Bari, 2007.

14.7   Master thesis

[143] M. Ruta. Design and development of an IP-based tele-control system. Master's thesis, Polytechnic University of Bari, 2002.

I hereby certify, under my responsibility and according to the provision of law about substitute declarations under the articles 46 and 47 of D.P.R. 445/2000, that what stated in this document is true.

Bari, March 22, 2021

Michele Ruta