

Curriculum Vitae

Naghmeh Ramezani Ivaki



4 September 2020

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1. Foreword

Naghmeh Ramezani Ivaki, daughter of Sayareh Esmaeili and Ali Mohammad Ramezani Ivaki, was born in Savadkooh, Mazandaran, Iran, on the 20th of September 1983.

Academic degree: PhD in Information Science and Technology, obtained at the Faculty of Sciences and Technology (FCTUC) of the University of Coimbra (UC), September 30, 2016.

Current contractual situation:

- [March 2019 – February 2022] **Researcher** (Investigador doutorada) in the context of FCT project METRICS: Monitoring and Measuring the Trustworthiness of Critical Cloud Systems with contract number IT057-18-7391.

Total teaching service time: 4.5 years

- Invited Professor (IPV) – 0.5 years
- Invited Assistant Professor (UC) – 2.0 years
- Invited Teaching Assistant (UC) – 1.5 years
- Invited Assistant Professor (Iran) – 0.5 years

Synopsis:

Naghmeh specializes in the scientific field of Informatics Engineering, with particular focus on security and dependability of computer systems. She is a member of the *Software and Systems Engineering Group* (SSE) of the *Centre for Informatics and Systems* (CISUC), Department of Informatics Engineering, University of Coimbra, where she carries out her research since 2009. She is also an IEEE member since 2012.

Naghmeh obtained her PhD degree in September 30, 2016. In her field of specialization, she has authored **27 peer-reviewed publications**, including papers in international journals (5), international conferences (13), national conferences (1), short papers in international conferences (3), international workshops (3), and 1 book (in Persian) and 1 book chapter. These publications have been **cited at least 100 times** in research work. Naghmeh has also authored 3 technical reports and 3 posters. She **participated in 23 scientific meetings** (21 international) where she presented 13 papers and 1 poster. She was awarded with 4 research grants and distinguished with a best poster award.

Naghmeh **participated in 10 research projects** (8 international projects). She contributed to the organization of **11 scientific events** taking roles of publication chair,

track chair, publicity chair, and participating in local arrangements. Naghmeh is an **Editorial Board Member** of the Services Transactions on Internet of Things and was part of **10 program committees of international conferences**. She **chaired 2 research sessions** at one international conference and one international workshop, **served 34 times as reviewer**, 6 times for international journals (e.g., ACM Computing Surveys, Elsevier Journal of Systems and Software, IEEE Transactions on Services Computing), 27 times for international conferences (e.g., IEEE International Symposium on Software Reliability Engineering (ISSRE), IEEE International Conference on Software Quality, Reliability, and Security (QRS), International conference on parallel computing, Euro-par, IEEE International Conference on Services Computing, IEEE International Conference on Cloud Computing, Latin-American Symposium on Dependable Computing (LADC)), 1 for an international workshop.

At a pedagogic level, Naghmeh was Invited Professor at the department of informatics engineering, of the superior school of technology and management of Viseu of the polytechnic institute of Viseu (IPV) in 2018-2019. Naghmeh also **taught practical classes in 5 editions of subjects at the University of Coimbra**, Portugal (with the program *Acertar o Rumo*), **and 3 editions of subjects at the Payame Noor University, Iran**, at the BSc level. She has **advised one MSc student** (jointly with Prof. Henrique Madeira) and one summer internship student.

Naghmeh was **6 times invited to present her research work** in knowledge transfer contexts (2 times abroad).

The following table presents all naming conventions used in this document.

Reference	Description
JP	International Journal Paper
CP	International Conference Paper
CSP	International Conference Short Paper
WP	International Workshop Paper
NCP	National Conference Paper
IR	Thesis / Internship Report
B	Book (in Persian)
TR	Technical Report
PST	Poster
PIC	Presentations in International Conferences, Workshops, and Meetings
PI	Presentation by Invitation
M	Pedagogic Material

1.1 Personal Information

Complete Name: Naghmeh Ramezani Ivaki

Nationality: Portuguese and Iranian

Portuguese Citizen Card (document nr.): 31782179 2 ZZ1, valid until 27-03-2021

Birth date: September 20, 1983

Birth place: Faramarzkola, Savadkooh, Mazandaran, Iran

Address: Departamento de Engenharia Informatica, POLO II, University of Coimbra-Pinhal de Marrocos, Coimbra, Portugal, 3030-290

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Email: naghmeh@dei.uc.pt

Homepage: <https://eden.dei.uc.pt/~naghmeh>

1.2 Education and academic degrees

This section presents the academic degrees held by Naghmeh Ivaki.

- **[February 2009 – September 2016] Doctor of Philosophy (PhD) in Information Science and Technology**, University of Coimbra (UC), Portugal, with the thesis entitled “*Reliable Distributed Communication: Design Solutions and Protocols*”. Her thesis was awarded *Summa Cum Laude* (*Aprovado com Distinção e Louvor*). Her PhD work, supervised by Professor Filipe Araújo [1], is on the dependable distributed systems domain with focus on reliable and fault tolerant distributed communication. Naghmeh was awarded with a PhD individual scholarship (from April 2010 to March 2014), granted by the Portuguese Foundation for Science and Technology from the Ministry of Science, Technology and Higher Education (FCT-MCTES), with contract number SFRH/BD/45740/2008.
- **[September 2006 – December 2008] Master of Science (MSc) in Information Technology (IT) Engineering** (2 years master degree), Tarbiat Modares University (TMU), Tehran, Iran. To obtain a Master of Science degree in Iran students have to pass an overall exam. Naghmeh ranked in the **50th position out of about 12000 students (top 0.4%)**. Her MSc internship, supervised by Professor Abbas Asosheh [2], was on network security domain with focus on DDOS attacks.

MSc Thesis Title: *Design and Simulation of an Intrusion Detection System Based on Mobile Agents for DDOS Attacks*

Core Subjects: *Information Technology (e-strategy), BPR (Business Process Reengineering), Information System Management, Business Model, Web Architecture, IT Project Management, and Data Mining*

Final classification: *18.23 out of 20*

- **[September 2001 – December 2005] Bachelor of Science (BSc) in Computer Software Engineering** (4 years engineering degree), University of Alzahra, Tehran, Iran. To access the public university in Iran, students have to pass an overall exam. Naghmeh ranked in the **250th position out of about 150000 students (top 0.16%)**. Her BSc internship, supervised by Professor Reza Azmi [3], was on the distributed systems domain.

Thesis Title: *Implementation of a Cluster in Linux Environment*

Final classification: *15.98 \approx 16 out of 20*

- **[September 1997 – July 2001] High School of Physics and Mathematics** (4 years), at the Public Exemplary School of Mohammadi Laeini, Neka, Iran. To enter to this special school, she passed an overall exam in her province, which selected a **set of 100 top students out of about 10000 students (top 1%)**.

Final classification: *19.30 out of 20*

1.3 Professional background

This section summarizes the professional background of Naghmeh Ivaki, by presenting: i) all contractual relations with Higher Education Institutions; ii) other technical/teaching experience carried out in an informal manner.

1.3.1 Contractual relations

Teaching

- **[September 2018 – February 2019] Invited Assistant Professor** at the Department of Informatics Engineering, **University of Coimbra** (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh is responsible for teaching practical classes of the subject “Programação em Java” and “Programação Avançada em Java” under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra is Professor Bruno Cabral [5].
- **[September 2018 – February 2019] Invited Professor** at the department of

informatics engineering, of the superior school of technology and management of Viseu of the polytechnic institute of Viseu (IPV) (*contrato de trabalho em funções públicas, em regime de tempo integral, sem exclusividade*). Naghmeh is responsible for teaching theoretical and practical classes of the subject “Embedded Systems”, and practical classes of the subjects “Object Oriented Programming” and “Computer Technologies”.

- **[September 2017 – August 2018] Invited Assistant Professor** at the Department of Informatics Engineering, University of Coimbra (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh is responsible for teaching practical classes of the subject “Programação em Java” and “Programação Avançada em Java” under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra is Professor Bruno Cabral [5].
- **[February 2016 – August 2016] Invited Teaching Assistant** at the Department of Informatics Engineering, University of Coimbra (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh was responsible for teaching practical classes of the course *Programação Avançada em Java* under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra is Professor Bruno Cabral.
- **[March 2015 – July 2015] Invited Teaching Assistant** at the Department of Informatics Engineering, University of Coimbra (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh was responsible for teaching practical classes of the course *Programação Avançada em Java* under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra was Professor Luis Paquete [6].
- **[February 2014 – June 2014] Teaching Assistant (Monitor)** at the Department of Informatics Engineering, University of Coimbra (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh was responsible for teaching practical classes of the course *Programação Avançada em Java* under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra was Professor Luis Paquete [6] and the subject coordinator was Professor Luis Paquet [5].
- **September 2007 – February 2008] Invited Assistant Professor** (*partial time contract*), University of Payame Noor, Shahryar, Tehran, Iran (<http://teh-shahryar.pnu.ac.ir>). Naghmeh was responsible for teaching the theoretical classes of following subjects: *Computer Networks*, *The fundamentals of Computer Systems*, and *Information storage and retrieval*.

Research

- **[March 2019 – February 2022] Researcher** (Investigador doutorada) in the context of FCT project METRICS: **Monitoring** and Measuring the Trustworthiness of Critical Cloud Systems with contract number IT057-18-7391.
- **[December 2016 – December 2017] Postdoctoral Research Fellow** (*contrato de bolsa de Pós-Doutoramento*) in the context of the H2020 European Project “EUBrasilCloudFORUM: Fostering an International dialogue between Europe and Brazil”, Project ID: 689495, funded under: H2020-EU.2.1.1. - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT), coordinated by Professor Marco Vieira [4].
- **[December 2015 – February 2016] Awarded with an individual research grant** (*Bolsa de Investigação - Mestre*) in the context of Project EI0227 (internal reference at the University of Coimbra) with contract number DPA-56-15-530. The grant work plan was focused on researching design solutions for developing reliable distributed communication.
- **[December 2015 – February 2016] Awarded with an individual research grant** by the iCIS project - Intelligent Computing in the Internet of Services (CENTRO-07-ST24 FEDER-002003), co-financed by QREN, in the scope of the Mais Centro Program and European Union's FEDER - to collaborate with the project's Task 1.4 (please refer to Section 2.3 for further details on the project).
- **[April 2010 – March 2014] Awarded with a PhD scholarship**, granted by the Portuguese Foundation for Science and Technology from the Ministry of Science, Technology and Higher Education (FCT-MCTES), with contract number SFRH /BD /45740 /2008.
- **[March 2009 – March 2010] Awarded with an individual research grant** (*contrato de bolsa de investigação – Mestre*) by the European Project EDGeS - Enabling Desktop Grids for e-Science - at the University of Coimbra, Portugal (<http://edges-grid.eu>). EDGeS was supported by a Grant from the European Commission's FP7 IST Capacities program under grant agreement RI-211727. The project's goal was to create an integrated Grid infrastructure that would seamlessly integrate a variety of Desktop Grids with EGEE type of service Grids. The project was coordinated by Professor Luis Silva [7].
- **[October 2005 – February 2008] Researcher and Developer** (*partial time contract*) in IRANet (Iran Research and Academic Network - <http://iranet.ir/>) in the Center for Research of Theoretical Physics & Mathematics (IPM - <http://ipm.ir/>), Tehran, Iran. In particular, Naghmeh was responsible for the following tasks:
 - *[October 2005 – October 2006] Member of Multimedia Research and Development Group.* Naghmeh was responsible for the analysis, design, and

implementation of a Voice Mail Server using SIP protocol.

- [October 2006 – July 2007] Member of Network Security Research and Development Group. Naghmeh was responsible for the analysis, design, and implementation of a Bayesian-based Intrusion Detection System (IDS).
- [July 2007- February 2008] Member of Network Administration at the University of Tehran, which was a part of IRANet's responsibility. The tasks carried out by Naghmeh were installing and configuring DNS servers (Bind-9.3.0), Mail Servers (Postfix), configuring iptables, developing a NAT server with filtering functionalities, and installing and configuring vulnerability scanners (Nessus).

1.3.2 Other technical or teaching experience

The following activities were carried out as a result of a personal invitation, thus without a formal contract.

- **[February 2008 – July 2008]**
 - **Class Assistant** at the Faculty of Engineering at the Tarbiat Modares University, Tehran, Iran. She was responsible for teaching the practical part of the course *IT project Management*. The course was coordinated by Professor Abbas Asosheh [2] who invited Naghmeh for performing this task.
 - **Participated in the Management Team** of an e-learning project in Tarbiat Modares University, Tehran, Iran. This project aimed to prepare the electronic materials for the course *IT Project Management* in order to be used in a virtual university.
 - **Participated in The Technical Group** for preparing a business case for the installation of an Internet Data Center (IDS) for Technology, Research and Science Ministry, in the context of a project managed by Professor Abbas Asosheh in Tarbiat Modares University.
- **[January 2003 – July 2004] Class Assistant** at the University of Alzahra, Tehran, Iran. She was responsible for teaching the practical classes of the following courses: *Algorithm Design* and *Data Structures*. These courses were coordinated by Professor Behruz Gholizadeh [8], who invited Naghmeh to perform this task.
- **[February 2014 – June 2016] Invited to collaborate as an informatics specialist in a PhD work**, which was carried out by Teresa Fragoso at the Department of Civil Engineering, University of Coimbra. Naghmeh was responsible for developing a tool to model a typical city and analyze the impact of the city future extension on the cost of changes must be taken place on the water conduits, pipes network, and transport network. The main objective of the work was to minimize the cost by choosing the best localizations for extension. Naghmeh solved this multi-objective problem by implementing a simulated annealing algorithm and also all supporting software in Python.

2. Scientific performance

This section presents Naghmeh's scientific activity, with particular emphasis in her published work, indicators of scientific recognition, participation in research projects, and intervention in the scientific community. Naghmeh is a researcher and member of the Software and Systems Engineering Group (SSE) of the Center for Informatics and Systems of the University of Coimbra (CISUC), since February 2009. Her research interests include dependability, security, trustworthiness, and distributed systems.

2.1 Scientific Production

This section presents all publications authored by Naghmeh Ivaki, including journal papers, conference papers, workshop papers, technical reports, posters, theses and internship reports, and one book (in Persian).

The following five publications (referenced JP4, JP3, CP7, JP2, and CP11) have been selected as the most representative of Naghmeh's contribution in the field of Informatics Engineering.

2.1.1 Selected publications

- JP4 Naghmeh Ivaki, Nuno Laranjeiro, and Filipe Araujo. "A survey on reliable distributed communication." *Journal of Systems and Software* 137 (2018): 713-732., DOI: 10.1016/j.jss.2017.03.028. Impact factor: 2.559
- CP7 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, "A Taxonomy of Reliable Request-Response Protocols", The 30th ACM/SIGAPP Symposium on Applied Computing (SAC), Salamanca, Spain, April 13-17, 2015, DOI: 10.1145/2695664.2695898.
- CP11 Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, "Software Metrics Indicators of Security Vulnerabilities", The 28th IEEE International Symposium on Software Reliability Engineering (ISSRE 2017), Toulouse, France, October 23-26, 2017, DOI: 10.1109/ISSRE.2017.11.
- CP12 Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, "An Approach for Trustworthiness Benchmarking using Software Metrics", The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018), Taipei, Taiwan, December 4-7, 2018, DOI: 10.1109/PRDC.2018.00019.
- CP13 Daniel Mendes, Naghmeh Ivaki, Henrique Madeira, "Effects of GPS Spoofing on Unmanned Aerial Vehicles", The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018), Taipei, Taiwan, December 4-7, 2018, DOI: 10.1109/PRDC.2018.00026.

The following subsections present all publications authored or co-authored by Naghmeh (including the selected five presented above).

2.1.2 Journal papers

- JP5 Ákos Hajdu and Naghmeh Ivaki and Imre Kocsis and Attila Klenik and László Gönczy and Nuno Laranjeiro and Henrique Madeira and András Pataricza, “Using Fault Injection to Assess Blockchain Systems in Presence of Faulty Smart Contracts”, preprint: arXiv: 2006.11597, 2020.
- JP4 Naghmeh Ivaki, Nuno Laranjeiro, and Filipe Araujo. "A survey on reliable distributed communication." *Journal of Systems and Software* 137 (2018): 713-732., DOI: 10.1016/j.jss.2017.03.028. Impact factor: 2.559
- JP3 Nuno Laranjeiro, Seyma Nur Soydemir, Naghmeh Ivaki, Jorge Bernardino, “Testing data-centric services using poor quality data: from relational to NoSQL document databases”, *Journal of the Brazilian Computer Society*, 23: 14, 2017, DOI: 10.1186/s13173-017-0063-x. Citation Impact: 0.934
- JP2 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “A Design Pattern for Recovering from TCP Connection Crashes in HTTP Applications”, *International Journal of Services Computing (IJSC)* (currently known as *Services Transactions on Services Computing*, <http://hipore.com/stsc/>), ISSN: 2326-7550 4, no. 1: 39–54, March 2016. DOI: 10.29268/stsc.2016.4.1.4.
- JP1 Abbas Asosheh, Naghmeh Ivaki, “A Comprehensive Taxonomy of DDOS Attacks and Defense Mechanism Applying in a Smart Classification”, *WSEAS Transaction on Computers*, 2008.

2.1.3 Papers in international conferences

- CP13 Daniel Mendes, Naghmeh Ivaki, Henrique Madeira, “Effects of GPS Spoofing on Unmanned Aerial Vehicles”, *The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018)*, Taipei, Taiwan, December 4-7, 2018, DOI: 10.1109/PRDC.2018.00026.
- CP12 Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, “An Approach for Trustworthiness Benchmarking using Software Metrics”, *The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018)*, Taipei, Taiwan, December 4-7, 2018, DOI: 10.1109/PRDC.2018.00019.
- CP11 Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, “Software Metrics Indicators of Security Vulnerabilities”, *The 28th IEEE International Symposium on Software Reliability Engineering (ISSRE 2017)*, Toulouse, France, October 23-26, 2017, DOI: 10.1109/ISSRE.2017.11.

- CP10 Everaldo Leme, Naghmeh Ivaki, Nuno Laranjeiro, Regina Moraes, “*Analyzing Gossip Protocols for Reliable MANET Applications*”, The IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25-30, 2017, **DOI:** 10.1109/IEEE.EDGE.2017.21.
- CP9 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “*Design Patterns for Reliable One-Way Messaging*”, The 14th IEEE International Conference on Services Computing (SCC 2017), Honolulu, Hawaii, USA, June 25-30, 2017, **DOI:** 10.1109/SCC.2017.40 .
- CP8 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “*A Design Pattern for Reliable HTTP-Based Applications*”, The 12th IEEE International Conference on Services Computing (SCC 2015), New York City, USA, June 27 - July 2, 2015, **DOI:** 10.1109/SCC.2015.94.
- CP7 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “*A Taxonomy of Reliable Request-Response Protocols*”, The 30th ACM/SIGAPP Symposium on Applied Computing (SAC), Salamanca, Spain, April 13-17, 2015, **DOI:** 10.1145/2695664.2695898.
- CP6 Naghmeh Ivaki, Filipe Araújo, Fernando Barros, “*Session-Based Fault-Tolerant Design Patterns*”, The 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), Taiwan, December 16-19, 2014, **DOI:** 10.1109/PADSW.2014.7097875.
- CP5 Naghmeh Ivaki, Filipe Araújo, Fernando Barros, “*Design of Multi-Threaded Fault-Tolerant Connection-Oriented Communication*”, The 20th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2014), Singapore, Nov 18-21, 2014, **DOI:** 10.1109/PRDC.2014.10.
- CP4 Naghmeh Ivaki, Serhiy Boychenko, Filipe Araújo, “*A Fault-Tolerant Session Layer with Reliable One-Way Messaging and Server Migration Facility*”, The 3rd IEEE Symposium on Network Cloud Computing and Applications (NCCA 2014), Rome, Italy, 2014, **DOI:** 10.1109/NCCA.2014.20.
- CP3 Naghmeh Ivaki, Filipe Araújo, Raul Barbosa, “*A Middleware for Exactly-Once Semantics in Request-Response Interactions*”, The 18th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2012), Japan, 2012, **DOI:** 10.1109/PRDC.2012.23.
- CP2 Abbas Asosheh, Arash Afshinfar, Mohammad Kharrat, Naghmeh Ivaki, “*A network model for the intelligent marine container tracking*”, Proceeding of the 8th conference on Applied informatics and communications, pages 303-308, ISBN: 978-960-6766-94-7, 2008.
- CP1 Abbas Asosheh, Naghmeh Ivaki, “*A new and Comprehensive Taxonomy of DDOS Attacks and Defense Mechanisms*”, The 6th WSEAS Conferences, Tenerife, Spain, 2007.

2.1.4 Papers in national conferences

- NCP1 Daniel Mendes, José Nunes, Sérgio Patrão, Naghmeh Ivaki, Pedro Amaro, and João Carlos Cunha, *“Assessing the Robustness of a Quadcopter’s Flight Controller to Sensor Failures”*, INForum - 9th Simpósio de Informática, Aveiro, Portugal, 2017.

2.1.5 Short Papers in international conferences

- CSP3 Naghmeh Ivaki, Nuno Antunes, *“SIDE: Security-aware Integrated Development Environment”*, The 31st IEEE International Symposium on Software Reliability Engineering (ISSRE 2020), October 12 – 15, 2020.
- CSP2 Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, *“Towards an Approach for Trustworthiness assessment of Software as a Service”*, The 1st IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25 - 30, 2017, DOI: 10.1109/IEEE.EDGE.2017.39.
- CSP1 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, *“Towards Designing Reliable Messaging Patterns”*, The 15th IEEE International Symposium on Network Computing and Applications (NCA 2016), Cambridge, MA, USA, October 30 - November 2, 2016, DOI: 10.1109/NCA.2016.7778618.

2.1.6 Papers in international workshops

- WP3 Naghmeh Ivaki, Filipe Araújo, *“Fault-Tolerant Bi-Directional Communications in Web-Based Applications”*, The International Symposium on Ubiquitous and Cloud Computing Frontiers (UCCF 2014), In the 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), Taiwan, December 16-19, 2014, DOI: 10.1109/PADSW.2014.7097891.
- WP2 Naghmeh Ivaki, Nuno Laranjeiro, Marco Vieira, *“Towards Evaluating the Impact of Data Quality on Service Applications”*, Workshop on Reliability and Security Data Analysis (RSDA 2013), In The 43rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), Budapest, June 24-27, 2013, DOI: 10.1109/DSNW.2013.6615509.
- WP1 Naghmeh Ivaki and Diogo Ferreira and Filipe Araújo, *“Benchmarking the 3G-Bridge in the EDGeS Infrastructure”*. In Cracow Grid Workshop (CGW'09), Krakow, Poland, October 12-14, 2009.

2.1.7 Book and Book Chapters

- B2 Ivaki N., Laranjeiro N., Barros F., Araújo F. "Connection Handler: A Design Pattern for Recovery from Connection Crashes". In: Ramachandran M., Mahmood Z. (eds) Software Engineering in the Era of Cloud Computing. Computer Communications and Networks. Springer, Cham, 2020.
- B1 Abbas Asosheh, Parisa Khakshour Saadat, Naghmeh Ivaki, Mojtaba Nasiriyar, "Information technology project management: Knowledge based and Service Oriented", Published by Sherkate Ravabete Omomi va Tablighat, pp. 404, 2009 (In Persian).

Title in Persian: مدیریت پروژه های فناوری اطلاعات (سرویس گرا و دانش محور)

2.1.8 Technical reports

- TR3 Naghmeh Ivaki, Filipe Araújo, Fernando Barros, "Design and Development of a Fault-Tolerant Multi-Threaded Acceptor- Connector Design Pattern", reference number TR 2014-003, CISUC Research Center, University of Coimbra, Portugal, 2014.
- TR2 Fatemeh Kazemeyni, Naghmeh Ivaki, Maghsoud Abbaspour and Akbar Behzadi, "Anomaly Detection Based on Bayesian Algorithm Using Port Scan Frequency", IPM - the Center for Research of Theoretical Physics and Mathematics, Tehran, Iran, 2008.
- TR1 Naghmeh Ivaki, Nastaran Yousefi, Maghsoud Abbaspour and Akbar Behzadi, "Voice Over IP: SIP and H323 Protocols", IPM - the Center for Research of Theoretical Physics and Mathematics, Tehran, Iran, December 2005 (In Persian).

2.1.9 Poster presentations

- PST3 Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, "A Design Pattern for Reliable HTTP-Based Applications", The 12th IEEE International Conference on Services Computing (SCC 2015), New York City, USA, June 27 - July 2, 2015.
- PST2 Naghmeh Ivaki, Filipe Araújo, Fernando Barros. "Session-Based Fault-Tolerant Design Pattern", In CISUC - Center of Informatics and Systems of University of Coimbra – Workshop, Coimbra, Portugal, September 23-24, 2014.
- PST1 Naghmeh Ivaki and Diogo Ferreira and Filipe Araújo, "Benchmarking the 3G-Bridge in the EDGeS Infrastructure", Cracow Grid Workshop (CGW'09), Krakow, Poland, October 12-14, 2009.

2.1.10 Theses and internship reports

IR3 Naghmeh Ivaki, *"Reliable Distributed Communication: Design Solutions and Protocols"*, Ph.D. Thesis, under supervision of Professor Filipe Araújo, University of Coimbra, Coimbra, Portugal, April 2016.

IR2 Naghmeh Ivaki, *"Design and Simulation of an Intrusion Detection System Based on Mobile Agents for DDOS Attacks"*, MSc Thesis, under supervision of Professor Abbas Asosheh, Tarbiat Modares University, Tehran, Iran, December 2008 (In Persian).

Title in Persian: طراحی و شبیه سازی یک سیستم تشخیص نفوذ مبتنی بر عامل برای حمله های توزیع شده اختلال در سرویس دهی

IR1 Naghmeh Ivaki, *"Implementation of a cluster in Linux environment"*, BSc Internship Report, under supervision of Professor Reza Azmi, University of Alzahra, Tehran, Iran, December 2005 (In Persian).

Title in Persian: پیاده سازی یک کلاستر در محیط لینوکس

2.1.11 Presentations and scientific meetings attended

International conferences, workshops, and meetings

PIC21 The IEEE International Conference on Service Computing (SCC 2017), co-located with IEEE Services, presented *"Design Patterns for Reliable One-Way Messaging"*, Honolulu, Hawaii, USA, June 25 - June 30, 2017.

PIC20 The IEEE International Conference on EDGE Computing (EDGE 2017), co-located with IEEE Services, presented *"Towards an Approach for Trustworthiness Assessment of Software as a Service"*, Honolulu, Hawaii, USA, June 25 - June 30, 2017.

PIC19 The 15th IEEE International Symposium on Network Computing and Applications (NCA 2016), presented *"Towards Designing Reliable Messaging Patterns"*, Cambridge, MA, USA, October 30 - November 2, 2016.

PIC18 The DEVASSES ToK Workshop VII, presented *"Connection Handler: A Design Pattern for Recovery from Connection Crashes"*, UFAL, Maceió, August 8-9, 2016.

PIC17 The 1st WCN - Workshop on Cloud Networks within the XXXVI Congresso da Sociedade Brasileira de Computação, Porto Alegre, Rio Grande do Sul, 4-7 July 2016.

PIC16 The DEVASSES ToK Workshop V, presented *"A Taxonomy of Reliable Request-Response Protocols"*, University of Coimbra, Portugal, February 1-2, 2016.

PIC15 The 12th IEEE International Conference on Services Computing (SCC 2015), presented the paper *"A Design Pattern for Reliable HTTP-Based Applications"*, New York City, USA, June 27 - July 2, 2015.

- PIC14 The 30th ACM/SIGAPP Symposium on Applied Computing (ACM SAC), presented the paper *"A Taxonomy of Reliable Request-Response Protocols"*, Salamanca, Spain, April 13-17, 2015.
- PIC13 The 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), presented the paper *"Session-Based Fault-Tolerant Design Patterns"*, Taiwan, December 16-19, 2014.
- PIC12 The International Symposium on Ubiquitous and Cloud Computing Frontiers workshop (UCCF 2014) collocated with the 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), presented the paper *"Fault-Tolerant Bi-Directional Communications in Web-Based Applications"*, Taiwan, December 16-19, 2014.
- PIC11 The 20th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2014), presented the paper *"Design of Multi-Threaded Fault-Tolerant Connection-Oriented Communication"*, Singapore, November 18-21, 2014.
- PIC10 The Tempus Cabriolet Workshop, University of Coimbra, Portugal, September 29 – October 1, 2014.
- PIC9 The 3rd IEEE Symposium on Network Cloud Computing and Applications (NCCA14), presented the paper entitled *"A Fault-Tolerant Session Layer with Reliable One-Way Messaging and Server Migration Facility"*, Rome, Italy, February 5-7, 2014.
- PIC8 The 43rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), Budapest, June 24-27, 2013.
- PIC7 The 14th European Workshop on Dependable Computing (EWDC 2013), Coimbra, Portugal, May 15-16, 2013.
- PIC6 The 2nd Workshop of the Cockpit Project, Wednesday, Coimbra, Portugal, March 20, 2013.
- PIC5 The 2nd Critical Step Workshop on Dependability and Certification, Coimbra Portugal, February 20–21, 2013.
- PIC4 The 18th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2012), presented the paper entitled *"A middleware for exactly-once semantics in request-response interactions"*, Niigata, Japan, November 18-19, 2012.
- PIC3 The 1st Critical Step Workshop on Dependability and Certification, Coimbra Portugal, February 20-21, 2012.
- PIC2 The 9th Grid Workshop in Krakow, presented the paper entitled *"Benchmarking the 3G-Bridge in the EDGeS Infrastructure"*, Poland, October 12-14, 2009.

PIC1 The 9th EGEE Conference, presented the result of her task (benchmarking) and her colleague David Santiago task (monitoring), entitled *“Monitoring and Benchmarking the EDGeS Infrastructure*, in the EDGeS project meeting hold at the conference, Barcelona, Spain, 2009.

National conferences, workshops, and meetings

PNC2 The workshop of the Center for Informatics and Systems - CISUC Workshop – CISUC 2015–2020, presented the Poster *“Session-Based Fault-Tolerant Design Pattern”*, Coimbra, Portugal, September 23-24, 2014.

PNC1 The summer workshop of the project Intelligent Computing in the Internet of Services workshop (iCIS), Coimbra, Portugal, June 24-25, 2014.

2.1.12 Grants and Awards

- **Awarded with an individual postdoctoral research grant (December 2016, December 2017)**, by the H2020 Project EuBrazilCloudForum - Fostering and International Dialogue between Europe and Brazil project with contract number DPA-56-16-503.
- **Awarded with an individual research grant (December 2015 – February 2016)**, by the project EI0227 (internal reference at the University of Coimbra), with contract number DPA-56-15-530.
- **Awarded with an individual research grant (September 2014 – July 2015)**, by the iCIS project - Intelligent Computing in the Internet of Services (CENTRO-07-ST24 FEDER-002003), co-financed by QREN, in the scope of the Mais Centro Program and European Union's FEDER - to collaborate with the project's Task 1.4.
- **Awarded with an individual PhD scholarship (April 2010 – March 2014)**, granted by the Portuguese Foundation for Science and Technology from the Ministry of Science, Technology and Higher Education (FCT-MCTES), with contract number SFRH /BD /45740 /2008.
- **Best poster award**, In Cracow Grid Workshop (CGW'09), Krakow, Poland, October 12-14, 2009.

2.2 Scientific recognition

2.2.1 Citations known in the literature

Currently, there is a total of **100 known citations** referring publications authored/co-authored by Naghmeh Ivaki.

- Ivaki, Naghmeh, Nuno Laranjeiro, and Filipe Araujo. "A survey on reliable distributed communication." *Journal of Systems and Software* 137 (2018): 713-732. **(Cited by 4)**
 1. Minerva, R., Lee, G. M., & Crespi, N., "Digital Twin in the IoT context: a survey on technical features, scenarios and architectural models", *Proceedings of the IEEE*, 2020.
 2. Heping Jia, Rui Peng, Yi Ding, Changzheng Shao, "Reliability analysis of distributed storage systems considering data loss and theft", *Proceedings of the Institution of Mechanical Engineers Part O Journal of Risk and Reliability*, 2019.
 3. Guru Prasad Bhandari, Ratneshwer Gupta, 'Fault Analysis of Service-Oriented Systems: Asystematic Literature Review', *IET Software*, August 2018.
 4. Er. Ramandeep Kaur Brar, Er. Chinu, Er. Gurpreet Kaur, "Comparative Analysis: Parallel and Distributed Database", *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, Volume 5 Issue V, May 2017.
- Daniel Mendes, Naghmeh Ivaki, Henrique Madeira, "Effects of GPS Spoofing on Unmanned Aerial Vehicles", *The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018)*, Taipei, Taiwan, December 4-7, 2018. **(Cited by 3)**
 5. Paweł Burdziakowski · Navid Razmjooy · Vania Vieira Estrela · Jude Hemanth D, "Open-source software (OSS) and hardware (OSH) in UAVs", *Imaging and Sensing for Unmanned Aircraft Systems: Volume 2: Deployment and Applications*, 2020.
 6. Mehdi Karimibiuki, Michal Aibin, et. al, "Drones' Face off: Authentication by Machine Learning in Autonomous IoT Systems", *IEEE Ubiquitous Computing, Electronics & Mobile Communication Conference*, New York, United States, 2019.
 7. Paweł Burdziakowski, Navid Razmjooy, Vania Vieira Estrela, Jude Hemanth D, chapter: "Open Source Software (OSS) and Hardware (OSH) in UAVs" in book: "Imaging and Sensing for Unmanned Aerial", Vol II, Publisher: IET Publishing - The Institution of Engineering and Technology, 2019.
- Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, "An Approach for Trustworthiness Benchmarking using Software Metrics", *The 23rd IEEE Pacific Rim International Symposium on Dependable Computing (PRDC 2018)*, Taipei, Taiwan, December 4-7, 2018. **(Cited by 1)**
 8. C. I. Lemes, V. Naessens and M. Vieira, "Trustworthiness Assessment of Web Applications: Approach and Experimental Study using Input Validation Coding Practices," *2019 IEEE 30th International Symposium on Software Reliability Engineering (ISSRE)*, Berlin, Germany, 2019, pp. 435-445.
- Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, "*Software Metrics Indicators of Security Vulnerabilities*", *The 28th IEEE International Symposium on Software Reliability Engineering (ISSRE 2017)*, Toulouse, France, October 23-26, 2017. **(Cited by 14)**
 9. Mallouli, W.; Cavalli, A.; Bagnato, A. and Montes de Oca, E. (2020). **Metrics-driven DevSecOps**. In *Proceedings of the 15th International Conference on Software Technologies - Volume 1: ICSOFT*, ISBN 978-989-758-443-5, pages 228-233.

10. Shen, Junjie, Jun Yeon Won, Zeyuan Chen, and Qi Alfred Chen. "Drift with Devil: Security of Multi-Sensor Fusion based Localization in High-Level Autonomous Driving under {GPS} Spoofing." In *29th {USENIX} Security Symposium ({USENIX} Security 20)*, pp. 931-948. 2020.
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 12. Medeiros, Ibéria, and Nuno Neves. "Effect of Coding Styles in Detection of Web Application Vulnerabilities."
 13. Junjie Shen · Jun Yeon Won · Zeyuan Chen · Qi Alfred Chen, Drift with Devil: Security of Multi-Sensor Fusion based Localization in High-Level Autonomous Driving under GPS Spoofing, 2020.
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 15. Siavvas, Miltiadis. "Static analysis for facilitating secure and reliable software." (2019)
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 19. Song Wang, Nachi Nagappan, "Characterizing and Understanding Software Developer Networks in Security Development", 2019.
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- Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, "Towards an Approach for Trustworthiness assessment of Software as a Service", The 1st IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25 - 30, 2017, DOI: 10.1109/IEEE.EDGE.2017.39. **(Cited by 4)**
 23. Pereira, José D'Abruzzo, Rui Silva, Nuno Antunes, Jorge LM Silva, Breno de França, Regina Moraes, and Marco Vieira. "A Platform to Enable Self-Adaptive Cloud Applications Using Trustworthiness Properties."
 24. Guerrero Alarcón, Carlos Andrés. "Taxonomía sobre atributos de calidad en aplicaciones diseñadas para ser desplegadas en la nube." (2019).

25. Basso, Tania, Hebert Silva, and Regina Moraes. "On the Use of Quality Models to Characterize Trustworthiness Properties." In *International Workshop on Software Engineering for Resilient Systems*, pp. 147-155. Springer, Cham, 2019.
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- Everaldo Leme, Naghmeh Ivaki, Nuno Laranjeiro, Regina Moraes, "Analyzing Gossip Protocols for Reliable MANET Applications", The IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25-30, 2017 **(Cited by 2)**.
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 - Nuno Laranjeiro, Seyma Nur Soydemir, Naghmeh Ivaki, Jorge Bernardino, "Testing data-centric services using poor quality data: from relational to NoSQL document databases", Journal of the Brazilian Computer Society, 23: 14, 2017, DOI: 10.1186/s13173-017-0063-x. **(Cited by 1)**
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 - Naghmeh Ivaki, Filipe Araújo, "Fault-Tolerant Bi-Directional Communications in Web-Based Applications", The International Symposium on Ubiquitous and Cloud Computing Frontiers (UCCF 2014), In the 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), Taiwan, December 16-19, 2014, DOI: 10.1109/PADSW.2014.7097891. **(Cited by 1)**

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- Naghmeh Ivaki, Filipe Araújo, Raul Barbosa, "A Middleware for Exactly-Once Semantics in Request-Response Interactions", The 18th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC), Niigata, Japan, 2012 **(Cited by 2)**.
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2.3 Participation in scientific projects

- RP10 [May 2020 – October 2022]** Naghmeh is collaborating with the **H2020 European SESAR ER4 Project BUBBLES - Defining the BUilding Basic BLocks for a U-Space SEparation Management Service**.
- RP9 [January 2019 – December 2022]** Naghmeh is collaborating with the **H2020 European Project ADVANCE – Addressing Verification and Validation Challenges in Future Cyber-Physical Systems**. The scientific objective of the ADVANCE project is to conceive new approaches to support the Verification and Validation (V&V) of Cyber-Physical Systems (CPS). It will explore techniques, methods, and tools applicable to different phases of the system lifecycle, but always with the final objective of improving the effectiveness and efficacy of the V&V process.
- RP8 [August 2018 – July 2021]** Naghmeh is collaborating with the **FCT Project METRICS – Monitoring and Measuring Confidence in Critical Cloud Systems**. METRICS aims to propose a framework and means for monitoring and assessing the trustworthiness of cloud systems. This includes the definition of trustworthiness properties, their continuous measurement and analysis. The solution can also be used to monitor whether the data of individuals is handled properly. The project's outcome will be demonstrated in a big data analytics system used in city traffic management and improvement.
- **Naghmeh contributed in the preparation and writing of the following project deliverables:**
 - D1.1 – Quality Assurance and Risk Management Plan
- RP7 [November 2017 – October 2019]** Naghmeh is collaborating with the **H2020 European Project ATMOSPHERE - Adaptive, Trustworthy, Manageable, Orchestrated, Secure, Privacy-assuring, Hybrid Ecosystem for REsilient**

Cloud Computing, with reference number H2020-EUB-2017-777154. ATMOSPHERE is a 24-month project aiming at the design and development of an ecosystem comprised of a framework and a platform enabling the implementation of next generation trustworthy cloud services on top of an intercontinental hybrid and federated resource pool. The framework considers a broad spectrum of trustworthiness properties and their measures. The platform supports the development, build, deployment, measurement and evolution of trustworthy cloud resources, data management services and data processing services, and is demonstrated on a sensitive scenario consisting of a cloud-enabled secure and trustworthy application for distributed telemedicine.

– **Naghmeh contributed in the preparation and writing of the following project deliverables:**

- D3.5 – Monitoring Instruments and Platform Implementation
- D3.6 – Trustworthiness Measurement and Analysis Services Implementation

RP6 [2017 – 2018] Naghmeh collaborated with the **FCT Project Advanced Analytics for Empirical Assessment of Cloud Resilience**, supported by bi-lateral FCT program Portugal-Hungary, starts in 2017-2018. The project aims at the validation of cloud infrastructures by fault injection and robustness testing, followed by a generalized model extraction of the observations by advanced data analysis. The flexibility and cost savings of cloud turn it the main solution for business applications and is leading to the cloudification of critical applications, despite the risks of moving critical applications into cloud environments. Experimental approaches are often used to evaluate the susceptibility to faults of cloud infrastructure and estimate risk. These experiments tend to produce huge amount of data that must be analyzed to extract the relevant information to improve cloud resilience. The project will exploit the long experience on fault injection and robustness testing (Coimbra), and on intelligent data analyses and modelling (Budapest), to derive new research opportunities to improve cloud. It will integrate the rich data assets in Coimbra and the existing core algorithms in Budapest.

– **Naghmeh was seconded as a researcher** in the following period and place:

- June 13 – June 20, 2018, Budapest University of Technology and Economics (BME), Budapest, Hungary;

RP5 [December 2016 – December 2017] Naghmeh collaborated with the **H2020 European Project EUBrasilCloudFORUM: Fostering an International dialogue between Europe & Brazil**. Project ID: 689495, funded under: H2020-EU.2.1.1. - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies - Information and Communication Technologies (ICT).

The EUBrasilCloudFORUM Coordination and Support Action aims at establishing an organizational cooperation model that enables the EU and Brazil to formulate and develop a common strategy and approach for Research & Innovation in Cloud Computing in line with the priorities of each region. Four main objectives have been set by the EU & BR consortium: 1) structure a community driven engagement forum for EU-Brazil policy and research and innovation dialogues; 2) deliver an EU-Brazil Research and Innovation Roadmap and Action Plan related to cloud computing; 3) build a web based EU-BR Service platform to promote and market the results from the EU-Brazil community as well as showcasing the success stories; and 4) organize and deliver focused EU-BR Cloud Computing Events. The project is coordinated by Marco Vieira, Full Professor at the University of Coimbra, Portugal [4].

- **Naghmeh contributed in the preparation and writing of the following project deliverables:**
 - D3.2 – Preliminary Research Roadmap
 - D3.4 – Final Research Roadmap
 - D2.1 – Interim report of the Working groups activities
- **Naghmeh was a reviewer of the following project deliverables:**
 - D2.3 – Final report of the Working groups activities.
 - D4.2 – Communication and Outreach Report incl. Market Place evolution

- RP4 [December 2016 – December 2017]** Naghmeh collaborated with the **European project EUBra-BIGSEA: Europe – Brazil Collaboration of BIG Data Scientific Research through Cloud-Centric Applications**. Funding EC | H2020 | RIA. Call: H2020-EUB-2015, Contract (GA) number: 690116. EUrope-BRAzil Collaboration on BIG Data Scientific REsearch through Cloud-Centric Applications aims at providing services in the cloud for the processing of massive data coming from highly connected societies, which impose multiple challenges on resource provision, performance, Quality of Service and privacy. Processing those data require rapidly provisioned infrastructures customised to Big Data requirements. The three main aims of the project are: 1) The development of innovative Big Data services for capturing, federating and annotating on the order of PB of data on top of efficient programming models; 2) The Development of advanced cloud services to support Big Data; 3) The demonstration of such services on applications with high social and business impact, addressing main scenarios of high interest for both Europe and Brazil.
- **The work produced within this project resulted in the following publications:**

- Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, *"Software Metrics Indicators of Security Vulnerabilities"*, The 28th IEEE International Symposium on Software Reliability Engineering (ISSRE 2017), Toulouse, France, October 23-26, 2017, DOI: 10.1109/ISSRE.2017.11.
- Nádia Medeiros, Naghmeh Ivaki, Pedro Costa, Marco Vieira, *"Towards an Approach for Trustworthiness assessment of Software as a Service"*, The 1st IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25 - 30, 2017, DOI: 10.1109/IEEE.EDGE.2017.39.

RP3 [January 2014 – December 2017] Naghmeh collaborated with the **DEVASSES – DEsign, Verification and VALidation of large scale, dynamic Service SystEmS**. DEVASSES is a Marie Curie International Research Staff Exchange Scheme (IRSES) project belonging to call FP7-PEOPLE-2013-IRSES (grant agreement: PIRSES-GA-2013-612569). It aims at taking a step forward in the design and deployment of large-scale, dynamic service-based software systems by supporting the transfer of knowledge on novel state of the art methods, techniques, and tools for both design time and run time verification and validation. The goal is to reinforce existing partners' cooperation through a coordinated program of exchange of researchers, taking as context a common research problem, which provides the frame for the project scientific activities and cannot currently be tackled by any of the partners individually. The consortium includes: University of Coimbra (Portugal), University of Florence (Italy), Unicamp - State University of Campinas (Brazil), Federal University of Alagoas (Brazil).

– **Naghmeh was seconded as a researcher** in the following periods and places:

- July 05 – August 20, 2015, Univesity of Unicamp, Limeira, Brazil;
- June 30 – July 30, 2016, University of Unicamp, Campinas, Brazil;
- August 1 – August 15, 2016, Federal University of Alagoas, Maceió, Brazil.

– **Naghmeh was a reviewer of the following project deliverables:**

- Run-time DEVASSES framework

– **The work produced within this project resulted in the following publication:**

- Everaldo Leme, Naghmeh Ivaki, Nuno Laranjeiro, Regina Moraes, *"Analyzing Gossip Protocols for Reliable MANET Applications"*, The IEEE International Conference on EDGE Computing (EDGE 2017), Honolulu, Hawaii, USA, June 25-30, 2017, DOI: 10.1109/IEEE.EDGE.2017.21.

RP2 [January 2013 – December 2015] Naghmeh collaborated with the **iCIS – Intelligent Computing in the Internet of Services** (CENTRO-07-ST24 FEDER-002003), co-financed by QREN, in the scope of the Mais Centro Program and European Union's FEDER. The goal of iCIS is to perform world class research in intelligent computing for the Internet of Services and Things, and to achieve a continuum and an increased momentum in national and international cooperation on these scientific challenges, sustainable increase in critical mass and international impact, as well as a long-term financial sustainability of the consortium by preparing it for national (e.g., QREN) and international (FP7, FP8) framework programmes and for technology transfer and start-up promotion. The consortium includes the Centre for Informatics and Systems of the University of Coimbra (CISUC); Instituto de Engenharia de Sistemas e de Computadores de Coimbra (INESCC); Department of Computer and Electronics Engineering of the University of Coimbra (UC-DEEC); Institute Pedro Nunes (IPN).

- **Naghmeh participated in Task 1.4, Work Package 1 – Thrustworthy Information and Communication Technology** (led by Nuno Laranjeiro [9] and Paulo Simões [13]). The concrete research topics focused in this task are: Intelligent Incident Detection Systems; Large Scale Security Assessment; Monitor, Assess, Predict, and Maintain a Trustworthy Internet of Services; Security in cloud service and computing environments; Trust, privacy and reputation management in critical infrastructures; Security for wireless moving objects; Trustworthy Self-Adaptive Systems.
- **Naghmeh was awarded with an individual Grant (Sep 2014 – Aug 2015)** by the to collaborate within Task 1.4 of the iCIS project.
- **The work produced within this project resulted in the following publications:**
 - o Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “*A Taxonomy of Reliable Request-Response Protocols*”, The 30th ACM/SIGAPP Symposium on Applied Computing (SAC), Salamanca, Spain, April 13-17, 2015, DOI: 10.1145/2695664.2695898.
 - o Naghmeh Ivaki, Nuno Laranjeiro, Filipe Araújo, “*A Design Pattern for Reliable HTTP-Based Applications*”, The 12th IEEE International Conference on Services Computing (SCC 2015), New York City, USA, June 27 - July 2, 2015, DOI: 10.1109/SCC.2015.94.

RP1 [February 2009 – April 2010] Naghmeh collaborated with the **European Project EDGeS - Enabling Desktop Grids for e-Science**, at the University of Coimbra, Portugal. EDGeS was supported by a Grant from the European Commission's **FP7 IST Capacities** program under grant agreement RI-211727. The project goals were to create an integrated Grid infrastructure that would seamlessly integrate a variety of Desktop Grids with EGEE type of service Grids. Refer to <http://edges-grid.eu/> for more details). Naghmeh's main task in this project was to implement a benchmark for the EDGeS Bridge (3G-Bridge), which enables jobs to cross the boundaries of desktop grids, like BOINC and XtremWeb, to service grids, like EGEE, and vice-versa.

2.4 Active participation in the community

This section presents Naghmeh's participation in the community (from a scientific performance perspective), within and outside the University.

2.4.1 Organization of scientific events and other meetings

1. **Participated in the local arrangements** for the Hash Code – Google's Coding Competitions, 2020, Coimbra Hub, University of Coimbra, Portugal.
2. **Publicity Co-Chair** of the 31th International Symposium on Software Reliability Engineering (ISSRE 2020), Coimbra, Portugal.
3. **Publication Co-Chair** of the 30th International Symposium on Software Reliability Engineering (ISSRE 2019), October 28 -31, Berlin, Germany.
4. **Publication Chair** of the 13th European Dependable Computing Conference (EDCC 2017), September 4-8, 2017, Geneva, Switzerland. The PC chair and general chair of the conference are respectively Professor Rogério de Lemos [10] and Professor Giovanna Di Marzo Serugendo [11].
5. **Track Chair and Publicity Chair** of the IEEE Services Emerging Technology Track: Dependable and Secure Services (DSS 2016), one day between June 27 and July 2, 2016, San Francisco, USA. Website is located at <http://dss.dei.uc.pt>. The other track chair members of DSS 2016 are Nuno Laranjeiro [9] and Marco Vieira [4] from University of Coimbra, Portugal.
6. **Publicity Chair and participation in the local organization** of the IEEE Measurements and Networking (M&N 2015), October 12-13, 2015, Coimbra, Portugal.

7. **Arrangements and Publicity Chair** of the IEEE Services 2015 Visionary Track: Dependable and Secure Services (DSS 2015) theme. This theme is organized within the IEEE 11th World Congress on Services (IEEE SERVICES 2015), June 27 - July 2, 2015, New York, USA. Website located at <http://dss.dei.uc.pt>. The chairs of DSS 2015 are Nuno Laranjeiro, Marco Vieira, and Pedro Furtado from University of Coimbra, Portugal.
8. **Participation in the Local organization** (with Professor Bruno Cabral and Marco Vieira, University of Coimbra) of a workshop within the European project TEMPUS - Cabriolet (Model-Oriented Approach and Knowledge-Based Intelligent System for Evolvable Academia- Industry Cooperation in Electronic and Computer Engineering), Department of Informatics Engineering of the University of Coimbra, 29 September – 1 October 2014.
9. **Publicity Chair** of the IEEE International Workshop on Dependable and Secure Services (DSS), 28–29 June 2014, Anchorage, Alaska, USA, within IEEE SERVICES 2014 (<http://dss2014.dei.uc.pt>).
10. **Participated in the local arrangements** for the 14th European Workshop on Dependable Computing (EWDC 2013), Coimbra, Portugal, May 15-16, 2013.
11. **Participated in the local arrangements** for the Bridges 2011, which is on Mathematics, Music, Art, Architecture and Culture, Coimbra, Portugal, July 2011.

2.4.2 Editorial Board memberships

- **Editorial Board member** of the Services Transactions on Internet of Things (STIOT) since 2016, <http://www.hipore.com/stiot/>.

2.4.3 Program Committees

- Program Committee member of the 12th International Conference on Cloud Computing Technology and Science (CloudCom 2020).
- Program Committee member of the 11th International Conference on Cloud Computing Technology and Science (CloudCom 2019).
- Program Committee member of the 10th International Conference on Cloud Computing Technology and Science (CloudCom 2018).
- Technical Program Committee member the IEEE Science and Technology Congress (CyberSciTech 2018).
- Technical Program Committee member of the 1st International Conference on Blockchain (ICBC 2018)
- Technical Program Committee member of the The 3rd International Congress on Internet of Things (ICIOT 2018)

- Technical Program Committee member of Track 1: Cyber Science and Fundamentals, in IEEE Science and Technology Congress (CyberSciTech 2017).
- Program Committee member of the S2 International Conference on Internet of Things (S2 ICIOT 2016).
- Program Committee member of the 18th IEEE International Conferences on Computational Science and Engineering (CSE 2015).
- Program Committee member of the 7th International Conference on Cloud Computing Technology and Science (CloudCom 2015).
- Program Committee member of the 23rd International Business Information Management Association Conference on Vision 2020: Sustainable Growth, Economic Development, and Global Competitiveness (IBIMA), Spain, 2014.

2.4.4 Session chairing

- The 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), Taiwan, December 16-19, 2014; session “9B: *Parallel/Distributed Algorithms IV*”.
- The International Symposium on Ubiquitous and Cloud Computing Frontiers (UCCF 2014) workshop, collocated with the 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2014), Taiwan, December 16-19, 2014; session “4W *Workshop - UCCF I*”.

2.4.5 Service as reviewer

Reviewer for the following international journals:

1. IEEE Access, 2019 (2 paper is reviewed)
2. International Journal of Web Services Research (IJWSR), 2017 (1 paper reviewed)
3. Elsevier Journal of Systems and Software (JSS), 2016 (1 paper reviewed)
4. IEEE Transactions on Services Computing 2015 (1 paper reviewed, 2 review cycles)
5. Journal of Grid Computing, 2013 (1 paper reviewed)
6. ACM Computing Surveys, 2012 (1 paper reviewed)

Reviewer for the following international conferences:

1. The IEEE MASCOTS Symposium on Modelling, Analysis, and Simulation of Computer and Telecommunication Systems, 2020 (1 paper is reviewed).

2. The 31st annual IEEE International Symposium on Software Reliability Engineering (*ISSRE*), 2020 (1 paper is reviewed).
3. The 20th IEEE international Conference on Software Quality, Reliability, and Security (QRS), 2020 (1 paper is reviewed).
4. The 11th International Conference on Cloud Computing Technology and Science (CloudCom), 2019 (1 paper reviewed).
5. The IEEE International Conference on Services Computing, SCC 2018 (1 paper reviewed)
6. The 10th International Conference on Cloud Computing Technology and Science (CloudCom), 2018 (2 papers reviewed).
7. The 29th annual IEEE International Symposium on Software Reliability Engineering (*ISSRE*), 2018 (2 papers are reviewed).
8. The 18th IEEE International Conference on Software Quality, Reliability, and Security (QRS), 2018 (1 paper is reviewed).
9. The 26th European Conference on Information Systems (ECIS), 2018 (1 paper is reviewed).
10. The 9th International Conference on Cloud Computing Technology and Science (CloudCom), 2017 (3 papers reviewed).
11. The IEEE Science and Technology Congress (CyberSciTech), 2017 (3 papers are reviewed)
12. The IEEE International Congress on Internet of Things (ICIOT), 2017 (1 paper reviewed).
13. The IEEE International Conference on Cognitive Computing (ICCC), 2017 (3 papers reviewed).
14. The IEEE International Conference on Cloud Computing (CLOUD), 2017 (1 paper is reviewed).
15. The 32nd ACM Symposium on Applied Computing (ACM SAC), 2017 (1 paper reviewed).
16. The S2 International Conference on Internet of Things (S2 ICIOT), 2016 (1 paper reviewed).
17. The 8th International Conference on Cloud Computing Technology and Science (CloudCom), 2016 (3 papers reviewed).
18. The Latin-American Symposium on Dependable Computing (LADC), 2016 (1 paper reviewed).
19. The 11th International Conference on Internet and Web Applications and Services (ICIW), 2016 (1 paper reviewed).
20. The 7th International Conference on Cloud Computing Technology and Science (CloudCom), 2015 (4 papers reviewed).

21. The 18th IEEE International Conferences on Computational Science and Engineering (CSE), 2015 (1 paper reviewed)
22. The 12th IEEE International Conference on Services Computing, SCC 2015 (1 paper reviewed)
23. The 4th IEEE International Congress on Big Data, 2015 (2 papers reviewed)
24. The 6th International Conference on Cloud Computing (CloudCom), 2014 (1 paper reviewed)
25. The 23th International Business Information Management Association Conference (IBIMA), 2014 (1 paper reviewed)
26. The 20th International conference on parallel computing, Euro-par 2014 (2 papers reviewed)
27. The 11th IEEE International Conference on Services Computing, SCC 2014 (3 papers reviewed)

Reviewer for the following international workshops:

1. The 4th International IEEE Workshop on Software Certification (1 paper reviewed)

2.4.6 Knowledge Transfer

The following presentations were done by invitation and with the goal of disseminating research work.

- PI6 **ISCAC – Coimbra Business School**, Coimbra, Portugal, invited by Prof. Pedro Costa to present the talk entitled “Benchmarking trustworthiness of software systems”, July 2018.
- PI5 **DEI/CISUC Seminar Series**, Coimbra, Portugal, invited by Prof. Henrique Madeira to present the talk entitled “Benchmarking trustworthiness of software systems”, July 2018.
- PI4 **UNICAMP, University of Campinas, Institute of Computation (IC)**, Campinas, Brazil. Invited by Professor Eliane Martins to present the talk entitled “*Design Patterns for Reliable Distributed Communications*”, July 19, 2016.
- PI3 **UNICAMP, Faculty of Technology (FT), Limeira, Brazil. Invited by Professor Regina Moraes** to present the talk entitled “*Reliable Point-to-Point Communications: Design and Development Solutions*”, August 4, 2015.
- PI2 **Software and Systems Engineering (SSE) SIGDEP Seminars**, Department of Informatics Engineering, University of Coimbra, Portugal. Invited by Professor Nuno Laranjeiro, to present the talk entitled “*A prefix tree of exactly-once request-response protocols*”, May 22, 2013.

- PI1 **Postgraduate Colloquium Series**, DEI-FCTUC Coimbra, Portugal. Invited by Dr. César Teixeira to present the talk entitled “*A prefix tree of exactly-once request-response protocols*”, May 17, 2013.

3. Pedagogic Skills

3.1 Teaching Activity

The following paragraphs present previous teaching activity of Naghmeh. Pedagogical surveys results were not carried out at the different institutions and, therefore, are not presented here. In short, Naghmeh has experience in teaching subjects at an introductory level (e.g., Programming in Java) and at a higher level of expertise (e.g., Enterprise Web Technologies). Naghmeh had also the experience of teaching subjects on Databases and Computer Networks in Iran, at the BSc and MSc levels.

- **[12 April 2019 and 13 April 2019]** Invited to Lecture two classes (2h30 hours each) of subject “Technologies and Management of Services” at the MSc level, in the department of informatics engineering, of the superior school of technology and management of Viseu of the polytechnic institute of Viseu (IPV). The topic of lecture was “Blockchain”.
- **[September 2018 – February 2019]** **Invited Professor** at the department of informatics engineering, of the superior school of technology and management of Viseu of the polytechnic institute of Viseu (IPV) (*contrato de trabalho em funções públicas, em regime de tempo integral, sem exclusividade*). Naghmeh is responsible for teaching theoretical and practical classes of the subject “Embedded Systems”, and practical classes of the subjects “Object Oriented Programming” and “Computer Technologies”.
- **[September 2018 – February 2019]** **Invited Assistant Professor** at the Department of Informatics Engineering, **University** of Coimbra (*contrato de trabalho em funções públicas a termo resolutivo certo, em regime de tempo parcial*). Naghmeh is responsible for teaching practical classes of the subject “Programação em Java” and “Programação Avançada em Java” under the program *Acertar o Rumo*. The Program coordinator at the University of Coimbra is Professor Bruno Cabral [5].
- **[September 2017 – August 2018]** **Invited Assistant Professor** at the Department of Informatics Engineering, University of Coimbra. Naghmeh was responsible for teaching practical classes of the subjects *Programação em Java* and *Programação Avançada em Java* under the program *Acertar o Rumo* (84 contact hours in 2 semesters (1 year)). The program coordinator was Professor Bruno Cabral [5].

- **[February 2016 – August 2016] Invited Teaching Assistant** in the Department of Informatics Engineering, University of Coimbra, Portugal. Responsible for teaching practical classes of the subject *Programação Avançada em Java* under the program *Acertar o Rumo* (84 contact hours in 1 semester (0.5 years)). The program coordinator was Professor Bruno Cabral [5].
- **[March 2015 – July 2015] Invited Teaching Assistant** in the Department of Informatics Engineering, University of Coimbra, Portugal. Responsible for teaching practical classes of the subject *Programação Avançada em Java* under the program *Acertar o Rumo* (42 contact hours in 1 semester (0.5 years)). The program coordinator was Professor Luis Paquet [6].
- **[February 2014 – June 2014] Teaching Assistant (Monitor)** in the Department of Informatics Engineering, University of Coimbra, Portugal. Responsible for teaching practical classes of the subject *Programação Avançada em Java* under the program *Acertar o Rumo*, (42 contact hours in 1 semester (0.5 years)). The program coordinator was Professor Luis Paquet [6].
- **[September 2007 – February 2008] Invited Assistant Professor**, in the Department of Computer Engineering, Payame Noor University, Shahryar, Iran. Responsible for teaching the theoretical classes of the subjects *Computer Networks*, *The fundamentals of Computer Systems*, and *Information storage and retrieval* (a total of about 135 contact hours during 1 Semester (0.5 years)).
- **[February 2008 – July 2008] Class Assistant**, Faculty of engineering at the Tarbiat Modares University, Tehran, Iran. She was responsible for teaching the practical part of the subject “IT project Management” taught by Professor Abbas Asosheh, who invited Naghmeh for performing this task (1 Semester – 0.5 years).
- **[January 2003 – July 2004] Class Assistant** in the Faculty of Engineering, Alzahra University, Tehran, Iran. Naghmeh was invited for teaching the practical classes of the following subjects: *Algorithm Design* and *Data Structures*, which were coordinated by Professor Behruz Gholizadeh, who invited Naghmeh for performing this task (4 semesters – 2 years).

3.2 Teaching service

Naghmeh has been responsible for teaching several subjects at the BSc levels, detailed in the following tables.

Year	Sem.	Subject	Courses	Responsibilities	Students	Class type	Hours/week
2018/2019	1	Embedded Systems	EI	Coordinator, lecturer	73	T	1h30
					27 (PL1)	PL	3h
					25 (PL2)	PL	3h
	1	Object Oriented Programming	EI	lecturer	25 (PL1)	PL	2h
					25 (PL1)	PL	2h
	1	Computer Technologies	EI	lecturer	31 (PL1)	PL	2h

T = Theoretical classes; TP = Theoretical-Practical classes; PL = Laboratory classes

3.3 Supervision and guidance activities

3.3.1 Supervised MSc students

1. (September 2020 – July 2021) Artur Duarte Coutinho, Master of Informatics Engineering, University of Coimbra (co-advisor: Professor Henrique Madeira [12]).
2. (September 2020 – July 2021) Bruno Ribeiro Dias, Master of Informatics Security, University of Coimbra (co-advisor: Professor Nuno Laranjeiro [9]).
3. (September 2020 – July 2021) Luís Carlos Marques Pinheiro, Master in Informatics Security, University of Coimbra (co-advisor: Professor Nuno Antunes [14]).
4. (September 2017 - July 2018) Daniel Mendes, “Risk-driven security testing of ArduCopter flight controller”, Master of Informatics Engineering, University of Coimbra (co-advisor: Professor Henrique Madeira [12]).

3.3.2 Guidance activities

1. Nádia Medeiros, University of Coimbra, from December 2016 till now. She is a Ph.D student and supervised by Prof. Marco Vieira [4] and Pedro Costa.
2. Daniel Mendes, University of Coimbra, Portugal, from September 2016 to November 2016. Daniel received a scholarship of three months for Naghmeh’s proposal entitled “Failure Analysis in a swarm of quadcopters” for the summer internship (*estágio de verão*) of CISUC, 2016.

3.3.3 Participation in academic juries

Participation in Juries as Examiner

- Carlos Lapa, Internship defense under the program *Acertar o Rumo (AoR)*, University of Coimbra, 11 October 2019.

- Mário Morais, Internship defense under the program *Acertar o Rumor* (AoR), *University of Coimbra*, 11 October 2019.
- Rui Forte, Internship defense under the program *Acertar o Rumor* (AoR), *University of Coimbra*, 11 October 2019.
- João Apolinário Crisóstomo, Internship defense under the program *Acertar o Rumor* (AoR), *University of Coimbra*, 19 October 2018.
- Rodrigo Jorge Sol Freitas, Internship defense under the program *Acertar o Rumor* (AoR), *University of Coimbra*, 19 October 2018.

3.4 Pedagogic materials produced

Naghmeh has produced several pedagogic materials, including support slides for theoretical classes and support and evaluation exercises for laboratory classes. The following paragraphs briefly describe the most relevant materials produced/adapted.

[2018–2019]

Introduction to programming in Java (Acertar o Rumor, University of Coimbra):

M3 Definition of the final project.

Embedded Systems (EI, polytechnic institute of Viseu):

M2 Naghmeh has produced all the materials for theoretical classes (based on the bibliography). In particular, Naghmeh created the subject slides, practical exercises and final project. She adapted and wrote four projects plus final project for the practical classes. The projects were focused on the usage of Arduino microcontroller, sensors and actuators for building several embedded systems and IoT applications. In the final project, the students had to implement an IoT application for monitoring and controlling an environment using Arduino, Raspberry Pi, and Node-red.

[2014–2015]

- M1 Naghmeh and Nuno Laranjeiro created boole (<http://boole.dei.uc.pt>), which is a truth table web application for education (boole is a fork of Booling created by João Cardoso, jaliborc.com, 2011-2014). A binary expression tree was added to the original application and the Boolean expression parsing engine was replaced. Several small layout and content adjustments were also made. The application has been used to teach classical logic at the Department of Informatics Engineering at the University of Coimbra, namely in Introduction to Programming and Problem Solving – a subject at the BSc level (Licenciatura em Engenharia e Informática Industrial), during the academic years of 2014/2015 and 2015/2016.

4. Other competences and activities

4.1 Languages

- 1) Persian or Farsi (First Language): Fluent
- 2) Tabari or Mazandarani (Parent Local Language): Fluent
- 3) English: Fluent
- 4) Portuguese: Fluent (Naghmeh holds a certificate of qualification of Portuguese language in level A2 obtained in 2012).
- 5) Arabic: Elementary

4.2 Technical skills

Java development

- Programming experience in Java Enterprise Edition environments.
- Experience in configuring and using application servers, namely JBoss.
- Experience in JSF, JPA, AJAX, and Websockets.
- Experience in SOAP and Restful web services.
- Experience in XML technologies in particular XML, XSD, XSL, XSLT and XPATH
- Practice with Message Oriented Middleware (MOM), in particular the JMS API
- Experience with Remote Method Invocation technologies, namely Java RMI.

Data access and management

- Experience with the SQL language.
- Practice with several relational database engines, such as MySQL and PostgreSQL, and also with NoSQL engines (e.g., MongoDB).

Other computing skills

- Programming experience in Python
- Programming experience in C and C++
- Knowledge of Pascal, VB, VB.net, Delphi, C51.
- Frequent use of LaTeX.
- Experience in UML.

4.3 Other activities

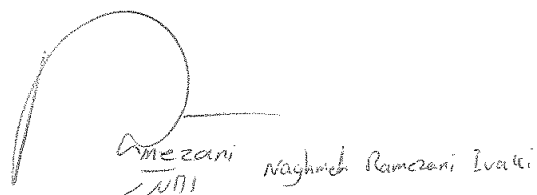
- Member of the GSF (Graduated, Staff and Student) Association in Tarbiat Modares University, 2006-2007 (1 year).
- Member of the ICT Work Group in Tarbiat Modares University, 2008 (1 year).
- Newsletter Manager for the ICT Work Group in Tarbiat Modares University, 2008 (4 months).
- Member of the Alzahra University Robotics Team under supervision of Professor Reza Azmi, 2005 (6 months).
- Member of the Computer Engineering Scientific Association in Alzahra University, 2001 to 2003 (2 years).
- Member of the Student's Association during High School, from 1998 to 2001 (3 years).

5. Contacts References

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Coimbra, September 4, 2020

A handwritten signature in black ink, featuring a large, stylized initial 'N' followed by the name 'Ramezani' and 'Ivaki' written in a cursive script.

Naghmeh Ramezani Ivaki