

PERSONAL INFORMATION

Mohammad Shojafar



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Sex Male | Date of birth 05/09/1983 | Nationality Iranian

POSITION

Senior Researcher

WORK EXPERIENCE

1 Jan 2018–Present

Senior Researcher

SPRITZ Security and Privacy Research Group, University of Padova, Padova (Italy)

My responsibilities:

- Contribute to the acquisition, set up, maintenance and integration of the Software Defined Network and Cloud infrastructure
- Security Network monitoring and measurement, including, e.g., resource provisioning, performance analysis and modeling of SDNs
- Analytical Modelling and mathematical analysis of the security issues (network trustworthy, misconfiguration, Accountability, and steal flow) on SDN/NFVs and network devices such as printers and propose robust algorithms
- Analysis SDN data and control planes and identify vulnerabilities, attacks, and countermeasures to preserve accountability
- Analytical Modelling and numerical analysis of malware/ransomware detection systems in Large datasets
- Modeling and numerical analysis of dynamic feature selection methods on Adversarial Machine Learning: attacks and Countermeasures

1 Dec 2016–31 Jan 2018

Senior Researcher

CNIT (Consorzio Nazionale Interuniversitario per le Telecomunicazioni), Rome (Italy)

I was as a CNIT senior researcher at the University of Rome Tor Vergata to work on European H2020 Superfluidity project. The SUPERFLUIDITY project aims at achieving superfluidity on the Internet: the ability to instantiate services on-the-fly, run them anywhere in the network (core, aggregation, edge) and shift them transparently to different locations.

My responsibilities:

- Establish solution environments for the 5G Cloud section of the SUPERFLUIDITY project
- Propose some scheduling and adaptive allocation techniques over the Cloud Datacenter in the SUPERFLUIDITY project
- Apply Artificial and meta-heuristic methods (e.g., machine learning and reinforcements) over 5G network architecture over SUPERFLUIDITY project.

1 Dec 2015–31 Nov 2016

Research Associate (PostDoc)

University of Modena and Reggio Emilia, Modena (Italy)

Work on the project SAMMClouds: Secure and Adaptive Management of Multi-Clouds

Description: The SAMMClouds project aims to address some of the open issues related to the Software as a Service (SaaS) and Infrastructure as a Service (IaaS) systems. Specifically, the research activities will focus on the study and proposal of innovative solutions with regard to three

main issues:

- Monitoring and management of IaaS cloud and multi-cloud systems
- Resource management in SaaS multi-cloud systems
- Data protection and security in cloud systems

My responsibilities:

- Propose, implement some analytical solutions techniques some novel solutions using AMPL (Knitro, MOSEK, and IBM CPLEX) optimizers.
- Incorporate the programming language (C++/python) using a bash script to the formulation, testing, deployment, and maintenance of the multi-cloud resource management issues.
- Implement VMs managing algorithm using Docker and Oracle Virtual box in some tasks.

1 Nov 2012–20 May 2016

PhD Student (Research Assistant)

Sapienza University of Rome, Rome (Italy)

My responsibilities:

- System modeling via computational intelligence methods, particularly mathematical optimization
- Techniques such as KKT, workload anticipation techniques, and gradient-based approaches, some AI methods, and some supervised learning (regression analysis)
- CloudSim Platform knowledge and hands-on experiences (Java coding)
- CVX/MOSEK packages over MATLAB Platform knowledge and hands-on experiences

1 Apr 2012–31 Oct 2012

Software Programmer

National Iran Oil Company (NIOC), Tehran (Iran)

My responsibilities:

- Software Analysing on PISDB and FFSDDB projects (oil field datastream organization software)
- Maintain confidentiality with regard to the information being processed, stored or accessed on the internal projects
- Coordinating the data entry flow and establishing initiative methods for reliable data entry
- Analyze, develop and implement testing procedures, programming (C++, Java) and documentation

22 Sep 2008–5 Jun 2012

Computer Science Lecturer

Sowmesara (Iran)

Teach CS courses for BSc students. The courses are like Data Structure, Computer Networks, Network Security, Data Storage, Algorithm Design.

1 Apr 2008–31 Dec 2008

Software Programmer

Rahyab Rayaneh Gostar sub-firm of Tidewater ltd co., Tehran (Iran)

I attended two projects **GCOMS**, **TCTS** as a software tester and programmer.

In **GCOMS**, which is a system under the direction of ports and maritime organization in non-container terminals domain with the slogan of creating unity procedure in port operations cycle at nine significant general cargo commercial ports of Iran.

My **responsibility** is to R&D and Design on IBM Rational Robot, IBM Rational Administrator, Testing Method and Error Recovery in Debugging Unit of GCOMS besides making tests scenarios and developing test program using C#.Net language applying Ranorex testing Tool. **This system is proud to be the second award winner of AFACT Electronic Asia Transcendent Pattern in 2011.**

In **TCTS** Project, which is a smart combination of hardware and software as an exhaustive resource for managing and leading container operations which are designed and implemented for administering the most extensive container port of Iran.

My responsibility was to test the program and troubleshooting the problems may happen in the connection exploited black box software testing. We monitored the testing and the test environment, often using Ranorex tool for this task, and often gather performance metrics by writing and executing

test scripts and bug reports.

2 Oct 2004–31 May 2006

Computer Systems Analyzer

Shibkaran Construction Co, Sary (Iran)

- Install network components and operating systems (WIN 2003 serv., 15 nodes winXP, internal switch)
- Troubleshooting network issues (hardware, software or network faults)

1 Jun 2003–22 Sep 2003

Computer Systems Analyzer

Medical University, Sary (Iran)

- Maintenance the OSs and educate the internal management software to the 150+ employee of the medical universities
- Troubleshooting the hardware and software of the PCs
- Documentations and data orchestration using Microsoft Office (Access and SQL) and VB Programming for troubleshooting of the software integration of the official processing

EDUCATION AND TRAINING

1 Nov 2012–20 May 2016

Information and Communications Technology

Advanced university studies (Doctorate)

Sapienza University of Rome, Rome (Italy)

- Design, implementation, and evaluation of energy-provisioning cloud-based (virtualized)/networked data centers testbed
- Mathematical, statistical modeling, and experimental analysis of latency problem in data centers
- CloudSim Cloud Computing Platform knowledge and hands-on experience (using C++/Java over Eclipse IDE)
- Develop efficient coding in C++/Matlab/JAVA

22 Sep 2007–15 Sep 2010

Computer Science (Software)

University studies (Master)

Qazvin Islamic Azad University, Qazvin (Iran)

- Programming in distributed computing e.g., grid and p2p computing using C++/Java programming.
- Programming in WSNs using NS2/Matlab IDEs.

22 Sep 2001–4 Dec 2006

Computer Science (Software)

University studies (Bachelor)

Iran University Science and Technology, Tehran (Iran)

- Software engineering courses
- Several technical reports and course projects such as MPI programming, C/C++/Java academic projects
- Software analyzing and modeling tools such as UML/RUP and Petri nets
- Be familiar with Microsoft Office, Microsoft Visual Studio, Adobe software

1 Jun 2012–12 Oct 2012

Certified Ethical Hacker (CEH)

Upper secondary education

Sharif University of Technology, Tehran (Iran)

- System Development & Management
- System Analysis & Audits
- Security Testing/Vulnerabilities
- Reporting

- Mitigation
- Ethics

1 Apr 2011–24 Mar 2012

JAVA J2SE Developer

Upper secondary education

Sharif University of Technology, Tehran (Iran)

Java Applets, Web Programming Skills, Teamwork, Verbal Communication, Web User Interface Design, Software Development Process, Object-Oriented Design (OOD)

PERSONAL SKILLS

Mother tongue(s) Persian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C1
IELTS English Language Test Test of English as a Foreign Language (TOEFL)					
Italian	B1	A1	A2	A1	A1
Spanish	A1		A1		

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Independent user	Proficient user

Digital skills - Self-assessment grid

Ethical Certified Hacker Java Programming- Advanced Microsoft Office 2007,10 Algorithm Design
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- **C++/Java Coding**
- **Able to write and execute complex queries in SQL**
- **Master in scripting languages e.g., HTML, CSS**
- Ability to work with several operating systems e.g., Windows, OSX, and Linux
- Good command of Microsoft Office™ tools
- Intermediate command of Oracle tools (JAVA, Oracle Enterprise 11g)
- Master in CASE & CAME Tools e.g., Rational Rose, Rational Robot, RanoRex Studio, PN Tools, SPNP (Stochastic Petri Net Package), Power Designer

Other skills

JBuilder, SQL Server (programming), Cascading Style Sheets (CSS), Microsoft Visual Studio, Computer technology (engineering), Test management (data systems), VMs management software

ADDITIONAL INFORMATION

Honours and awards

- **Permanent resident in Italy (obviously in EU) since Jan. 2018.**
- **Grant:** 58500 Euro, Italian Government, High Impact Research, Ministry of Higher Education, Rome, Italy (2012-2015)
- **Award:** 19500 Euro, Department of "Enzo Ferrari", University of Modena and Reggio Emilia,

Modena, Italy

- **Award:** 54000 Euro, University of Padua, Padua, Italy
- **Award:** 5000 Euro, Principle Investigator, Research Fund for University of Padua, Padua, Italy
- **Outstanding Reviewer** 2017 in FGCS, JPDC (Elsevier Publisher)
- Among top 1000 in the Iranian National University Exam (500,000 participants), 2001.

Projects

- EU H2020 SUPERFLUIDITY: A converged cloud-based 5G architecture (7.7M euro)
- EU H2020 TagItSmart! - Smart Tags driven service platform for enabling ecosystems of connected objects (7.0M euro)
- ITALY MIUR PRIN GAUChO: A Green Adaptive Fog Computing and Networking Architecture (400K euro)
- ITALY University of Modena project, S2C: Secure, Software-defined Clouds (35K euro)
- ITALY University of Rome Project, V-FOG: Vehicular Fog energy-efficient QoS mining and dissemination of multimedia Big Data streams (35K euro)
- ITALY University of Modena project, SAMMClouds: Secure and Adaptive Management of Multi-Clouds (35K euro)
- IRAN TCTS: Tidewater Container Terminal System (1.0M euro)
- IRAN GCOMS: General Cargo Operations Management System (10M euro)

Publications

Book

Gang Chen, Feng Liu, **M. Shojafar**, Fuzzy System and Data Mining, IOS Press, ISBN: 978-1-61499-618-7, pages 517, Vol. 281, April 2016. Available in <http://www.iospress.nl/book/fuzzy-system-and-data-mining/>

Selected Journal Publications

- **M. Shojafar**, N. Cordeschi, E. Baccarelli, *Energy-efficient Adaptive Resource Management for Real-time Vehicular Cloud Services*, **IEEE Transaction on Cloud Computing**, pp. 1-14, April 2016. [Acceptance rate=7%] [**JCR Class: Q1 IF=7.98**] [Most cited][**150+ citations**]
- **M. Shojafar**, C. Canali, R. Lancellotti, J.H. Abawajy, *Adaptive Computing-plus-Communication Optimization Framework for Multimedia Processing in Cloud Systems*, **IEEE Transaction on Cloud Computing**, pp. 1-14, October 2016. [Acceptance rate=7%] [**JCR Class: Q1 IF=7.98**]
- E. Baccarelli, ..., **M. Shojafar**, J. Stefa, *Energy-efficient Dynamic Traffic Offloading and Reconfiguration of Networked Datacenters for Big Data Stream Mobile Computing: Review, Challenges, and a Case Study*, **IEEE Network Magazine**, **IF=7.2**, 30(2), pp. 54-61, March 2016. [**JCR Class: Q1 IF=7.12**]
- M.M. Tajiki, S. Salsano, L. Chiaraviglio, **M. Shojafar**, B. Akbari, *Joint Energy Efficient and QoS-aware Path Allocation and VNF Placement for Service Function Chaining*, **IEEE Transactions on Network and Service Management**, pp.1-14, October 2018. [**JCR Class: Q1 IF=3.286**]
- C. Canali, L. Chiaraviglio, R. Lancellotti, **M. Shojafar**, *Joint Minimization of the Energy Costs from Computing, Data Transmission, and Migrations in Cloud Data Centers*, **IEEE Transactions on Green Communications and Networking**, 2 (2), pp. 580-595, June 2018.
- L. Chiaraviglio, F. D'Andreagiovanni, R. Lancellotti, **M. Shojafar**, N. Blefari-Melazzi, C. Canali, *An Approach to Balance Maintenance Costs and Electricity Consumption in Cloud Data Centers*, **IEEE Transactions on Sustainable Computing, (TSUSC)**, pp. 1-15, May 2018.
- P.G. Vineuza, Z. Pooranian, **M. Shojafar**, M. Conti, R. Buyya, *FOCAN: A Fog-supported Smart City Network Architecture for Management of Applications in the Internet of Everything Environments*, Elsevier, **Journal of Parallel and Distributed Computing**, pp. 1-17, July 2018. [**JCR Class: Q2 IF=1.815**]
- E. Baccarelli, P.G. Vineuza, M. Scarpiniti, **M. Shojafar**, J. Abawajy, *Fog of Everything: energy-efficient networked computing architectures, research challenges, and a case study*, **IEEE Access**, 5, pp. 9882-9910, May 2017. [**JCR Class: Q1 IF=3.5**]
- P.G. Vineuza, **M. Shojafar**, H. Mostafaei, Z. Pooranian, E. Baccarelli, *P_SEP: A Prolong Stable*

Election Routing Algorithm for Energy-limited Heterogeneous Fog-supported Wireless Sensor Networks, Springer, **Journal of Supercomputing (SUPE)**, 73(2), pp. 733–755, February 2017. [JCR Class: Q2 IF=1.532]

- **M. Shojafar**, Z. Pooranian, P.G.V. Naranjo, E. Baccarelli, *FLAPS: Bandwidth and Delay-efficient Distributed Data Searching in Fog-supported P2P Content Delivery Networks*, Springer, **Journal of Supercomputing (SUPE)**, 73(12), pp. 5239–5260, December 2017. [JCR Class: Q2 IF=1.532]
- N. Cordeschi, D. Amendola, **M. Shojafar**, E. Baccarelli, *Distributed and Adaptive Resource Management in Cloud-assisted Cognitive Radio Vehicular Access Networks with Hard Reliability Guarantees*, Elsevier, **Vehicular Communications**, 2(1), pp. 1–12, January 2015. [JCR Class: Q1 IF=3.289]
- N. Cordeschi, **M. Shojafar**, E. Baccarelli, *Energy-saving self-configuring networked data centers*, Elsevier, **Computer Networks**, 57(17), pp. 3479–3491, December 2013. [JCR Class: Q1 IF=2.52]
- **M. Shojafar**, S. Javanmardi, S. Abolfazli, N. Cordeschi, *FUGE: A joint meta-heuristic approach to cloud job scheduling algorithm using fuzzy theory and a genetic method*, Springer, **Cluster Computing**, 18(2), pp. 829–844, June 2015. [JCR Class: Q2 IF=1.60]
- **M. Shojafar**, Z. Pooranian, M.R. Meybodi, M. Singhal, *ALATO: An Efficient Intelligent Algorithm for Time Optimization in an Economic Grid Based on Adaptive Stochastic Petri Net*, Springer, **Journal of Intelligent Manufacturing (JIMS)**, 26(5), pp. 641–658, August 2015. [JCR Class: Q1 IF=3.667]

Selected Conference Publications

- Sh. Aggarwal, **M. Shojafar**, N. Kumar, M. Conti, *A New Secure Data Dissemination Model in Internet of Drones*, **53rd IEEE ICC**, pp. 1–6, 2018. (under review) (CORE:B, LiveSHINE:A+, MA:A+)
- M.M. Tajiki, S. Salsano, **M. Shojafar**, L. Chiaraviglio, B. Akbari, *Energy-efficient Path Allocation Heuristic for Service Function Chaining*, **21th ICIN**, France, pp. 1–8, 2018.
- **M. Shojafar**, L. Chiaraviglio, N. Blefari-Melazzi, S. Salsano, *P5G: A Bio-inspired Algorithm for the Superfluid Management of 5G Networks*, **18th IEEE GLOBECOM**, Singapore, pp. 1–7, 2017. (CORE:B, LiveSHINE:A, MA:A+)
- Z. Pooranian, **M. Shojafar**, P.G. V. Naranjo, L. Chiaraviglio, M. Conti, *A Novel Distributed Fog-based Networked Architecture to Preserve Energy in Fog Data Centers*, **14th IEEE MASS**, Florida, USA, pp. 604–609, 2017. (CORE:B, LiveSHINE:A, MA:B)
- L. Chiaraviglio, **M. Shojafar**, et al., *Optimal Superfluid Management of 5G Networks*, **3rd NetSoft 2017**, Bologna, Italy, pp. 1–9, 2017.
- **M. Shojafar**, C. Canali, R. Lancellotti, E. Baccarelli, *Minimizing Computing-plus-Communication Energy Consumptions in Virtualized Networked Data Centers*, **21th IEEE ISCC**, Messina, Italy, pp. 1137–1144, 2016. (CORE:B, LiveSHINE:B, MA:B)
- P.G.V. Naranjo, **M. Shojafar**, L. Vaca-Cardenas, C. Canali, R. Lancellotti, E. Baccarelli, *Big Data Over SmartGrid - A Fog Computing Perspective*, **24th IEEE SOFTCOM**, ICT Workshop, Split, Croatia, pp. 1–6, 2016. (CORE:B, LiveSHINE:C)
- P.G.V. Naranjo, **M. Shojafar**, A. Abraham, E. Baccarelli, *A New Stable Election-based Routing Algorithm to Preserve Aliveness and Energy in Fog-supported Wireless Sensor Networks*, **24th IEEE SMC**, Budapest, Hungary, pp. 002413–002418, 2016. (CORE:B, LiveSHINE:B, MA:A++)
- **M. Shojafar**, N. Cordeschi, J.H. Abawajy, E. Baccarelli, *Adaptive Energy-Efficient QoS-Aware Scheduling Algorithm for TCP/IP Mobile Cloud*, **16th IEEE GLOBECOM** in CCSNA WORKSHOP, San Diego, CA, USA, pp.1–6, December 2015. (CORE:B, LiveSHINE:A, MA:A+)
- **M. Shojafar**, N. Cordeschi, D. Amendola, E. Baccarelli, *Energy-saving adaptive computing and traffic engineering for real-time-service data centers*, **49th IEEE ICC** in CCSNA WORKSHOP, London, UK, pp. 1800–1806, June 2015. (CORE: B, LiveSHINE: A, MA: A+)
- N. Cordeschi, D. Amendola, **M. Shojafar**, E. Baccarelli, *Performance evaluation of primary-secondary reliable resource-management in vehicular networks*, **25th IEEE PIMRC**, Washington, DC, USA, pp. 959–964, September 2014. (CORE:B, LiveSHINE:A-, MA:A-)

Book Chapters

- **M. Shojafar**, M. Sookhak, M. Singhal, M. Conti, *Blockchain for Fog Computing: Security, Privacy, and Open Issues*, **John Wiley & Sons**, FOG COMPUTING: THEORY AND PRACTICE, pp. 1–20,

under review, 2018.

- **M. Shojafar**, N. Cordeschi, E. Baccarelli, *Resource scheduling for energy-aware reconfigurable Internet data centers*, **IGI GLOBAL**, Handbook of Research on Next-Generation High-Performance Computing, pp. 21-46, 2016.
- N. Cordeschi, **M. Shojafar**, D. Amendola, E. Baccarelli, *Energy-saving QoS resource management of virtualized networked data centers for Big Data Stream Computing*, Invited Book Chapter, **IGI GLOBAL**, pp. 122-155, June 2015.
- S. Abolfazli, Z. Sanaei, M. H. Sanaei, **M. Shojafar**, A. Gani, *Mobile cloud computing: The-state-of-the-art, challenges, and future research*, Encyclopedia of Cloud Computing, **John Wiley & Sons**, pp. 29-40, 2016.

Theses

- **M. Shojafar**, *Saving Energy in QoS Networked Data Centers*, Ph.D. Thesis, Faculty of DIET, Sapienza University of Rome, defend in 20th May 2016. **Advisor: Professor E. Baccarelli**
- **M. Shojafar**, *An Adaptive Stochastic Petri net model based on Learning Automata's and its application to Grid Computing*, Master Thesis, Faculty of Computer and Electrical Engineering, Qazvin Islamic Azad University (QIAU), September 2010. **Advisor: Professor M.R Meybodi**
- **M. Shojafar**, *A Petri net model and Its Usage in WFMs Optimization*, Bachelor Thesis, Faculty of Computer Engineering, Iran University Science and Technology (IUST), December 2006. **Advisor: Dr. A.A Ghadiri**

Presentations

Keynote Presentations

- (2017) SPRITZ-CLUSIT Workshop on Future Systems Security and Privacy, Padua, Italy Link: <http://spritz.math.unipd.it/events/2017/EU-cybersecuritymonth-workshop/>
- (2018) Keynote in Fog and Cloud Technology (University of Ottawa), 1-3 March, Canada
- (2018) Keynote in I2SBD2C (International Spring School for Big Data and Cloud Computing), 7-8 April, Tunisia

Citations

- **Google Scholar**: Citations: 1700+, H-Index: 24
- **SCOPUS**: Citations: 1000+, H-Index: 17

Memberships

Editorial Member

- **Associate Editor**, Springer, Cluster Computing (**JCR IF 2017: 1.60**)
- **Associate Editor**, Taylor & Francis, International Journal of Computers and Applications (**ESCI in Web of Science**)
- **Editor**, KSII Transactions on Internet and Information Systems (**JCR IF 2017: 0.611**)
- **Guest Editor**, Wiley, Concurrency and Computation: Practice and Experience, (**JCR IF 2017: 1.114**)

Technical Committee (TPC) Member

IEEE AINA '19, IEEE ICCE '19, IEEE ICNC '19, IEEE ICNSC '19
 IEEE UCC '18, IEEE GLOBECOM '18, IEEE ScalCom '18, IEEE I-SPAN '18
 IEEE SC2 '17, IEEE I-SPAN '17

Academic Reviewer

- IEEE Transaction on Fuzzy Systems
- IEEE Transactions on Industrial Informatics
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transaction on Cloud Computing
- IEEE Transactions on Systems, Man and Cybernetics: Part A: Systems and Humans

- IEEE Transactions on Mobile Computing
- IEEE Transactions on Big Data
- IEEE Network Magazine
- IEEE Communications Magazine
- IEEE Computer Communication Magazine
- IEEE Access
- IEEE Internet of Things Journal
- IEEE IT Professional
- Computer Networks, Future Generation Computer Systems, Journal of Parallel and Distributed Computing, Computer Communications, Applied Soft Computing (**Elsevier**)

References

- **Prof. Rajkumar Buyya**, Distinguished Professor, Director of the Cloud Computing and Distributed Systems (CLOUDS) Laboratory, School of Computing and Information Systems, University of Melbourne, Australia. Tel: +61-3-83441344, Email: rbuyya@unimelb.edu.au
- **Prof. Mukesh Singhal**, Chancellor's Professor, University of California, Merced, USA. Tel: +1-209-228-4344, Email: msinghal@ucmerced.edu
- **Prof. Mauro Conti**, Professor, Marie Curie Alumni, University of Padua, Via Trieste, 63 - 35131, Padua, Italy, Tel: +39-049-827-1488, Email: conti@math.unipd.it
- **Prof. Jemal Abawajy**, Professor, Deakin University, School of Information Technology, Melbourne, Australia. Tel: +61-3-522-71376, Email: jemal.abawajy@deakin.edu.au
- **Prof. Enzo Baccarelli**, Professor, Scientific Investigator of PRIN15, Gaucho/V-FOG projects, Sapienza University of Rome, Via Eudossiana 18, 00184 Rome, Italy. Tel: +39-06-445-85466, Email: enzo.baccarelli@uniroma1.it
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