

Mohammad Shojafar – Résumé

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Personal Profile

Mohammad Shojafar (S'13-M'17-SM'19) is a Marie Curie Fellow, Intel Innovator, and Senior Researcher at the Ryerson University since Jan. 2019 working on Network Security. He was a Senior Researcher in SPRITZ Security and Privacy Research group at the University of Padua, Italy in 2018. Also, he was CNIT Senior Researcher at the University of Rome Tor Vergata contributed on European H2020 "SUPERFLUIDITY" project. Mohammad was contributed to some Italian projects named "SAMMClouds", "V-FoG", "PRIN15" projects aim to address some of the open issues related to the Software as a Service (SaaS) and Infrastructure as a Service (IaaS) systems in Cloud and Fog computing. He received the Ph.D. degree from Sapienza University of Rome, Italy, in 2016 with an "Excellent" degree. His current research focuses on network security and privacy, distributed computing/systems, cloud data center, and fog computing. He published over 100 refereed articles in prestigious venues such as IEEE TCC, IEEE TNSM, IEEE Network, FGCS, INFOCOM, and ICC. He was a programmer and software analyzer at National Iranian Oil Company (NIOC) and Tidewater Ltd in Iran from 2008-2013, respectively. He is an Associate Editor in IEEE Transactions on Consumer Electronics, IET Communication, Cluster Computing, and Ad Hoc & Sensor Wireless Networks Journals. **He is Senior Member of IEEE.**

Education

- 2012-2016** PhD Hons in Information Communication Telecommunications (ICT)
Sapienza University of Rome, Italy
First Class (Excellent) - 4/4 *Thesis: Saving Energy in QoS Networked Data Centers*
- 2007-2010** Msc Hons in Computer Science (Software Eng.)
Qazvin Azad University, Qazvin, Iran
First Class - GPA: 3.54/4
- 2001-2006** BSc Hons in Computer Engineering - (Software Eng.)
Iran University Science and Technology, Iran
First Class - Excellent-4/4

Research Interests

- **Network Security (i.e., CAPEX/OPEX, reliability, trustworthy, failure rate, maintenance cost)**
- **Green Networking Security (i.e., Security issues in Cloud Data Center, Fog Networks, Grid Systems)**
- **5G Cyber Security (i.e., Security issues in SFC/NFV in SDN)**
- **Wireless Sensor Network (IoT)**

Teaching/Mentoring Experiences

- **Teaching CS Courses:** 2008-2012, Iran Azad University and Payam Noor public University, Iran
- **TA Course:** "Computer and Network Security" (Prof. M. Conti), University of Padua, Italy
- **TA Courses:** "Wired Broadband Systems", "Telecommunications" (Prof. E. Baccarelli), University of Rome, Italy
- **PhD/Postdoc Co-supervision:** 3 PhD students and one postdoc, SPRITZ Group, University of Padua, Italy
- **PhD Theses Co-supervision:** 3 PhD students, University of Rome, Italy
- **Master Theses Co-supervision:** 5 Msc in ICT students, University of Rome, Italy
- **Master Theses Co-supervision:** 10 CS Bsc students, Iran Azad University, Iran

Memberships/Certificates

- **Member: Intel Innovator, IEEE Senior Member**
- **Senior Member: SPRITZ Group**
- **Member: IEEE Systems Man and Cybernetics Society Technical Committee on Soft Computing**
- **Certify: Certified Ethical Hacker (CEH), Java J2SE/J2EE**

Publications (Most recent ones)

Book

Book-2019 Cybersecurity and Privacy in Cyber Physical Systems, **Taylor and Francis Press**, ISBN: 978-1-13834-667-3, pages 434, May 2019.

Book-2016 Fuzzy System and Data Mining, **IOS Press**, ISBN: 978-1-61499-618-7, pages 517, Vol. 281, April 2016.

Journals

J₁₁-2019 On Defending Against Label Flipping Attacks on Malware Detection Systems, **Neural Computing and Applications**, (NCAA), **Impact Factor= 4.664**, July 2019, **under review**.

J₁₀-2019 Similarity-Based Android Malware Detection Using Hamming Distance of Static Binary Features, **Future Generation Computer Systems**, (FGCS), **Impact Factor= 5.768**, May 2019, **under review**.

J₉-2019 Closed-Loop RFID and Open-Loop IoT Authentication Protocols Based on Blockchain **IEEE Transactions on Industrial Informatics**, **Impact Factor=7.377**, May 2019, **under review**.

J₈-2019 An Enhanced Three-factor, Three-entity Authentication and Key Agreement Protocol for EoT-V2G Network, **Ad Hoc Networks**, **Impact Factor= 3.490**, July 2019, **under review**.

J₇-2019 Can Machine Learning Model Learned with Static Features be Fooled: an Adversarial Machine Learning Approach, **Applied Intelligence**, **Impact Factor=2.882**, April 2019, **under second review**.

J₆-2019 An Adaptive Energy-aware Stochastic Task Execution Algorithm in Virtualized Networked Datacenters, **IEEE Transactions on Sustainable Computing**, April 2019, **under second review**.

J₅-2019 Joint Failure Recovery, Fault Prevention, and Energy-efficient Resource Management for Real-time SFC in Fog-supported SDN, **Computer Networks**, **Impact Factor=3.030**, July 2019, **Accepted**.

J₄-2019 LACO: Lightweight Three-factor Authentication, Access Control and Ownership Transfer Scheme for E-Health Systems in IoT, **Future Generation Computer Systems**, (FGCS), **Impact Factor= 5.768**, Vol. 96, pp. 410-424, July 2019.

J₃-2019 Identification of Android Malware Using Refined System Calls, **Concurrency and Computation Practice and Experience**, **Impact Factor= 1.167**, pp. 1-30, May 2019.

J₂-2019 Joint Energy Efficient and QoS-aware Path Allocation and VNF Placement for Service Function Chaining, **IEEE Transactions on Network and Service Management**, **Impact Factor=4.682**, Vol. 16, Iss. 1, pp. 374-388, March 2019.

J₁-2019 Energy-efficient Adaptive Resource Management for Real-time Vehicular Cloud Services, **IEEE Transaction on Cloud Computing**, **Impact Factor=5.967**, Vol. 7, Iss. 1, pp. 196-209, March 2019. ***Most Cited*** **HIGHEST Technical JCR Impact Factor Journal in 2018***

J₃-2018 Joint Minimization of the Energy Costs from Computing, Data Transmission, and Migrations in CDCs **IEEE Transactions on Green Communications and Networking**, Vol. 2, June 2018, pp. 580-595.

J₂-2018 An Approach to Trade Between Maintenance Costs and Electricity in Cloud Data Centers **IEEE Transactions on Sustainable Computing**, Vol. 3, Iss. 4, Oct.-Dec 2018, pp. 274-288.

- J₁-2018** Software Defined Service Function Chaining with Failure Consideration for Fog Computing, Springer, **Cluster Computing**, **Impact Factor=1.851**, Vol. 21, Iss. 4, Dec. 2018, pp. 1881–1897.
- J₂-2017** Fog of Everything: energy-efficient networked computing architectures, research challenges, and a case study, **IEEE Access**, **Impact Factor=4.098**, Vol. 5, May 2017, pp. 9882-9910.
- J₁-2017** P-SEP: A Prolong Stable Election Routing Algorithm for Energy-limited Heterogeneous Fog-supported Wireless Sensor Networks, **Journal of Supercomputing**, **Impact Factor=2.157**, Vol. 73, Iss. 2, 2017, pp. 733-755.
- J₂-2016** Adaptive Computing-plus-Communication Optimization Framework for Multimedia Processing in Cloud Systems, **IEEE Transaction on Cloud Computing**, **Impact Factor=5.967**, October 2016, pp. 1-14.
Most Technical JCR IF in 2018
- J₁-2016** 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**, **Impact Factor=7.503**, Vol. 30, Iss. 2, pp. 54-61, March-April 2016.
- J₂-2015** FUGE: A Joint Meta-heuristic Approach To Cloud Job Scheduling Algorithm Using Fuzzy Theory And A Genetic Method , **Cluster Computing**, **Impact Factor=1.851**, Vol. 18, Iss. 2, June 2015, pp. 829-844.
- J₁-2015** Distributed and Adaptive Resource Management in Cloud-assisted Cognitive Radio Vehicular Networks with Hard Reliability Guarantees, **Vehicular Communications**, **Impact Factor=3.530**, Vol. 2, No. 1, January 2015, pp. 1-12.
- J₁-2013** Energy-saving self-configuring networked data centers
Computer Networks, **Impact Factor=3.030**, Vol. 57, Iss. 17, December 2013, pp. 3479-3491.

Conferences

- C₄-2019** Automatic Clustering of Attacks in Intrusion Detection Systems
16th IEEE AICCSA, June 2019, **Accepted**.
(CORE: C; LiveSHINE: B; MA: C; **Acceptance rate: 28%**)
- C₃-2019** PAKIT: Proactive Authentication and Key Agreement Protocol for Internet of Things
INFOCOM 2019 WKSHPs - IoT4Health 2019, Jan. 2019, **Accepted**.
(GGS: 1/A++; CORE: A++; LiveSHINE: A++; MA: A++; **Acceptance rate: 19.70%**)
- C₂-2019** Joint Task Offloading and Resource Allocation for Delay-sensitive Fog Networks
53rd ICC 2019, June 2019, **Accepted**.
(GGS: 2/A; CORE: B; LiveSHINE: A+; MA: A+; **Acceptance rate: 39.00%**)
- C₁-2019** A New Secure Data Dissemination Model in Internet of Drones
53rd ICC 2019, June 2019, **Accepted**.
(GGS: 2/A; CORE: B; LiveSHINE: A+; MA: A+; **Acceptance rate: 39.00%**)
- C₃-2017** P5G: A Bio-inspired Algorithm for the Superfluid Management of 5G Networks
18th GLOBECOM 2017, December 2017, pp. 1-6.
(GGS: 2/A-; CORE: B; LiveSHINE: A; MA: A+; **Acceptance rate: 35.00%**)
- C₂-2017** A Novel Distributed Fog-based Networked Architecture to Preserve Energy in Fog Data Centers,
14th MASS 2017, October 2017, pp. 604-609.
(GGS: 3/B; CORE: B; LiveSHINE: A; MA: B; **Acceptance rate: 26.50%**)
- C₁-2017** Optimal Superfluid Management of 5G Networks, **3rd NetSoft 2017**, July 2017, pp. 1-9.
(**Acceptance rate: 18.6%**)
- C₁-2016** Minimizing Computing-plus-Communication Energy Consumptions in Virtualized Networked Data Centers **21th ISCC 2016**, April 2016, pp. 1137-1144.
(GGS: 3/B; CORE: B; LiveSHINE: A-; MA: B; **Acceptance rate: 36.50%**)
- C₂-2015** Adaptive Energy-Efficient QoS-Aware Scheduling Algorithm for TCP/IP Mobile Cloud
16th GLOBECOM 2015, Dec. 2015, pp. 1-6.
(GGS: 2/A-; CORE: B; LiveSHINE: A; MA: A+; **Acceptance rate: 35.00%**)
- C₁-2015** Energy-saving adaptive computing and traffic engineering for real-time-service data centers
50th ICC 2015, June 2015, pp. 1800-1806.*Most Conf. Cited*
(GGS: 2/A; CORE: B; LiveSHINE: A+; MA: A+; **Acceptance rate: 38.40%**)

Grant, honors, awards, fellowships

- 2020-2022** **PI:** 275,209 €, “PRISENODE” Project, **Marie Skłodowska-Curie Individual Fellowships, EU**
- 2018** **PI:** 5000 €, “SDN/NFV Security in CDC” Project, Department of Mathematics, University of Padova, Italy
- 2018** **Award:** 53000 €, Department of Mathematics, University of Padova, Padova, Italy
- 2016** **Award:** 19500 €, Department of “Enzo Ferrari”, University of Modena and Reggio Emilia, Modena, Italy
- 2016** **Nominated, Standard Performance Evaluation Corporation (SPEC), Dissertation Award 2016**
- 2015** **Talented Grant:** 650 €, Accommodation Flagship Conference, (ICC), Sapienza University of Rome, Italy
- 2012-2015** **Fellowship Award:** 58500 €, High Impact Research, Ministry of Higher Education, Rome, Italy
- 2008-2012** **Faculty Member**, Computer Engineering Department, Somesara Islamic Azad University, Rasht, Iran

Employment History

Research Experiences (Postdocs/Research Associates/Assistants)

- Jan. 2019** - Department of Computer Science, Ryerson University, Toronto, ON, Canada
- Present** *Senior Programmer*
Activities: Tackling Security and Privacy problems in SDN/NFVs targeting resource provision/allocation using reinforcement algorithms such as ML, mathematical solutions, and meta heuristics methods, write industry grants for network and IoT security using Python/C++
- Jan. 2018** - SPRITZ Security and Privacy Research Group , University of Padova, Padova Italy
- Jan. 2019** *Senior Researcher*
Activities: Tackling management of PhD/Msc Students and manage network security proposal in SDN/NFVs targeting resource provision and resource allocation using reinforcement algorithms such as ML, mathematical solutions, and meta heuristics methods, malware/ransomware detection systems in Large datasets using Python/C++
- Dec 2016** - Center of National Consortium Inter-universities in Telecommunication (CNIT), Rome, Italy
- Jan. 2018** *Senior Researcher*
Activities: Technical member in SUPERFLUIDITY project (Horizon 2020 European project), tackling management of 5G networks and manage heterogeneous traffic using reinforcement algorithms such as ML, mathematical solutions, and meta heuristics methods using Python/bash script/MATLAB/AMPLE.
- Dec 2015** - Department of “Enzo Ferrari”, University of Modena and Reggio Emilia, Modena
- Dec 2016** *Research Associate (PostDoc)*
Activities: Technical member in SAMMClouds project (Italian project), implement some analytical solutions techniques some novel solutions using AMPL (Knitro, MOSEK and IBM CPLEX) optimizers, C+, python, bash script, testing, deployment, Docker and Oracle Virtual box.
- Nov 2012** - Department in San Pientro in Vincoli, Sapienza University of Rome, Italy
- Dec 2015** *Research Assistant (PhD scholar)*
Activities: CVX/MOSEK packages over MATLAB Platform knowledge and hands-on experiences, System modelling via computational intelligence methods, particularly mathematical optimization (KKT, Regression, GP).

Job Experiences (Managing/Programming)

- 2012** Exploration Directorate section, National Iran oil Company
Computer Engineer/analzyer
Activities: Analyzer of Software (PISDB and FFSDDB projects), Analyze, develop and implement testing procedures, programming (C++, java) and documentation.
- 2008** Rahyab Rayaneh Gostar Section, Tidewater ltd. Co.
Software analyzer
Activities: Technical member in GCOMS, TCTS projects as a software tester and programmer. I analytically and empirically investigated the impact of concurrency on software testers such as IBM Rational Robot and devising a model for concurrency problem (e.g., C#/Bash prog.), apply analytical and problem solving skills to verify product through testing analytical models.

Editorial Skills

AE: Associate Editor, E: Editor, TPC: Program Committee, RW: Reviewer

- AE:** IEEE: IEEE Transactions on Consumer Electronics, (**Impact Factor=2.083**), IET: IET Communications, (**Impact Factor=1.779**), Springer: Cluster Computing (**Impact Factor=1.851**).
- E:** Wiley: Wireless Communications and Mobile Computing (**Impact Factor=1.396**); MDPI: Sensors (**Impact Factor=3.031**); Taylor & Francis: International Journal of Computers and Applications.
- TPC:** IEEE ICNC '20, IEEE UCC '19, **IEEE INFOCOM '19 CryBlock**, **IEEE INFOCOM '19 ICCN**, IEEE GLOBECOM '19, IEEE SC '19, IEEE ICNC '19, IEEE UCC '19, IEEE ICCE '19, IEEE ICNC '19, ICNSC '19, IEEE UCC '18, IEEE GLOBECOM '18, IEEE SC2 '18, IEEE ScalCom '18, IEEE I-SPAN '18, IEEE SC2 '17, IEEE I-SPAN '17.
- RW:** *IEEE* {Network Magazine, Communications Magazine, TIFS, TFS, TCC, TSC, TPDC, TMC}, *Elsevier* {Computer Networks, FGCS, JPDC, JNCA}, *Springer* {SUPE, ASC, WINET, WIRE, ITJ}.

Software Engineering/Technical Skills

- **Scientific programming tools:** Matlab, AMPL, CPLEX, Mininet, iCloudSim, iFogSim
- **Programming Languages:** Python/bash, Java, C++, ASP.NET, C#, VB.NET
- **Operating Systems:** Linux, Apple OS X, Microsoft Windows, TinyOS

Referees

- **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, School of Computer and Electrical Eng., University of California, Merced, USA. Tel: +1-209-228-4344, Email: msinghal@ucmerced.edu
- **Prof. Mauro Conti**, Professor, University of Padova, Padova, Italy. Tel: +39-049-827-1488, Email: conti@math.unipd.it
- **Prof. Ali Miri**, Professor, Associate Chair, Department of Computer Science, Ryerson University (RU), Toronto, ON, M5B 2K3, Canada, Tel:1 (416) 979-5000 x3131, Email: Ali.Miri@ryerson.ca
- **Prof. Jemal Abawajy**, Professor, Deakin University, Geelong, Melbourne, VIC, 3220, Australia, Tel.: +61-3-5227-1768, Email: Jemal@deakin.edu.au
- **Prof. Neeraj Kumar**, Associate Professor, Thapar Institute of Engineering & Technology, Punjab, 147003, India, Tel: +91-887-254-0189, Email: neeraj.kumar@thapar.edu
- **Dr. Burak Kantarci**, Assistant professor, School of Electrical Engineering and Computer Science University of Ottawa, ON, K1N 6N5, Canada, Tel: +1-(613)-562-5800, Email: bkantarc@uottawa.ca