

Mohammad Shojafar – Résumé

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Personal Profile

Mohammad Shojafar (S'13-M'17-SM'19) is Associate Professor (Senior Lecturer) and Intel Innovator working in the 6G Innovation Centre (6GIC) at the University of Surrey, United Kingdom. Before joining to 6GIC, he was a Marie Curie Fellow working on MSCA Global Fellowship "PRISENODE" in SPRITZ Security and Privacy Research group at the University of Padua, Italy. He is a PI of AutoTrust, a 750k euro project on 5G security and autonomous vehicle that is supported by European Space Agency in 2021. Also, he was a Senior Researcher at the Ryerson University, Toronto (Canada) for 10 months working on network security project at the Telus Communications (TELUS) in 2019. 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 5GPPP 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 (5G network), distributed computing/systems, cloud data center, and fog computing. He published over 120 refereed articles in prestigious venues such as IEEE TCC, IEEE TNSM, IEEE TII, IEEE T-ITS, IEEE IoTJ, 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 Network and Service Management, IEEE Transactions on Consumer Electronics, IEEE System Journal, IET Communication, and Computer Network Journals. He is Senior Member of IEEE, Distinguished ACM Speaker, and Professional member of ACM.

Education

- 2012-2016** PhD Hons in Information Communication Telecommunications (ICT)
Sapienza University of Rome, Italy
First Class (Excellent) - GPA: 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 (Excellent) - GPA: 3.54/4
- 2001-2006** BSc Hons in Computer Engineering (Software Eng.)
Iran University Science and Technology, Iran
First Class (Excellent) - GPA: 3.2/4

Research Interests

- **Green Networking Security (i.e., Security issues in Vehicular Network, Cloud/Fog Data Center, Fog Networks)**
- **Network Security (i.e., CAPEX/OPEX, Reliability, Trustworthy, Failure Rate, Maintenance Cost)**
- **6G Cyber Security (i.e., Security issues in SFC/NFV in SDN)**
- **Security in IoT using Cryptography Protocols**

Teaching/Mentoring Experiences

- Teaching EEE2040 Communication and Networks: 2020-continue, University of Surrey, UK
- Teaching EEEM048 Internet of Things: 2020-continue, University of Surrey, UK
- 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: 6 PhD students and one postdoc, University of Padua and University of Rome, Italy

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-2020** Machine Intelligence and Big Data Analytics for Cybersecurity Applications, Springer, ISBN: 978-0-42932-493-2, Page 534, 919, December 2020.
- Book-2020** Blockchain for Cybersecurity and Privacy-Architectures, Challenges, and Applications, Taylor and Francis Press, ISBN: 978-0-42932-493-2, Page 404, August 2020.

Selected Journals

- J₅-2021** PPVF: Privacy-Preserving Protocol for Vehicle Feedback in Cloud-Assisted VANET
IEEE Transactions on Intelligent Transportation Systems, **Impact Factor=6.492**, October 2021.
- J₄-2021** TEL: Low-Latency Failover Traffic Engineering in Data Plane
IEEE Transactions on Network and Service Management, **Impact Factor=4.195**, July 2021.
- J₃-2021** Joint QoS-aware and Cost-efficient Task Scheduling for Fog-Cloud Resources in Volunteer Computing System
ACM Transactions on Internet Technology, **Impact Factor=3.135**, July 2021.
- J₂-2021** Forward Privacy Preservation in IoT-Enabled Healthcare Systems
IEEE Transactions on Industrial Informatics, **Impact Factor=10.215**, March 2021.
- J₁-2021** Light-Edge: A Lightweight Authentication Protocol for IoT Devices in an Edge-Cloud Environment
IEEE Consumer Electronics Magazine, **Impact Factor=4.016**, January 2021.
- J₉-2020** FED-IIoT: A Robust Federated Malware Detection Architecture in Industrial IoT
IEEE Transactions on Industrial Informatics, **Impact Factor=10.215**, December 2020.
- J₈-2020** Adaptive Computing-plus-Communication Optimization Framework for Multimedia Processing in Cloud Systems, **IEEE Transaction on Cloud Computing**, **Impact Factor=4.714**, December 2020.
- J₇-2020** Intelligent Reflecting Surface Assisted Mobile Edge Computing for Internet of Things
IEEE Wireless Communications Letters, **Impact Factor=4.66**, November 2020.
- J₆-2020** LEVER: Secure Deduplicated Cloud Storage with Encrypted Two-Party Interactions in CPS
IEEE Transactions on Industrial Informatics, **Impact Factor=10.215**, September 2020.
- J₅-2020** Voice-Transfer Attacking on Industrial Voice Control Systems in 6G-Aided IIoT Domains
IEEE Transactions on Industrial Informatics, **Impact Factor=10.215**, September 2020.

- J₄-2020** A Cryptanalysis of a Honeyword System in the IoT Platform
IEEE Internet of Things Journal, **Impact Factor=9.471**, May 2020.
- J₃-2020** GRVMP: A Greedy Randomized Algorithm for Virtual Machine Placement in Cloud Data Centers
IEEE System Journal, **Impact Factor= 3.987**, June 2020.
- J₂-2020** Similarity-Based Android Malware Detection Using Hamming Distance of Static Binary Features,
Future Generation Computer Systems, **Impact Factor= 6.125**, April 2020.
- J₁-2020** On Defending Against Label Flipping Attacks on Malware Detection Systems,
Neural Computing and Applications, **Impact Factor= 4.774**, March 2020.
- J₄-2019** Joint Failure Recovery, Fault Prevention, and Energy-efficient Resource Management for Real-time SFC in Fog-supported SDN, **Computer Networks**, **Impact Factor=3.111**, July 2019.
- J₃-2019** LACO: Lightweight Three-factor Authentication, Access Control and Ownership Transfer Scheme for E-Health Systems in IoT, **Future Generation Computer Systems**, **Impact Factor= 6.125**, July 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=4.195**, March 2019.
- J₁-2019** Energy-efficient Adaptive Resource Management for Real-time Vehicular Cloud Services,
IEEE Transaction on Cloud Computing, **Impact Factor=4.714**, March 2019. ***Most Cited***
- J₂-2018** Joint Minimization of the Energy Costs from Computing, Data Transmission, and Migrations in CDCs
IEEE Transactions on Green Communications and Networking, June 2018.
- J₁-2018** An Approach to Trade Between Maintenance Costs and Electricity in Cloud Data Centers
IEEE Transactions on Sustainable Computing, Oct.-Dec 2018.
- J₂-2017** FOCAN: A fog-supported smart city network architecture for management of applications in the internet of everything environments, **Journal of Parallel and Distributed Computing**,
Impact Factor=2.297, July 2017.
- J₁-2017** Fog of Everything: energy-efficient networked computing architectures, research challenges, and a case study, **IEEE Access**, **Impact Factor=4.098**, May 2017.
- 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=8.808**, March-April 2016.
- J₁-2015** Distributed and Adaptive Resource Management in Cloud-assisted Cognitive Radio Vehicular Networks with Hard Reliability Guarantees, **Vehicular Communications**, **Impact Factor=4.706**, January 2015.
- J₁-2013** Energy-saving self-configuring networked data centers
Computer Networks, **Impact Factor=3.111**, December 2013.

Selected Conferences

- C₂-2021** Link Latency Attack in Software-Defined Networks
17th IEEE CNSM 2021, Jan. 2021.
(GGs: B; CORE: B; LiveSHINE: B; MA: C; **Acceptance rate: 19.80%**)
- C₁-2021** PGA: A Priority-aware Genetic Algorithm for Task Scheduling in Heterogeneous Fog-Cloud Computing
INFOCOM 2021 WKSHPs, Jan. 2021.
(GGs: 1/A++; CORE: A++; LiveSHINE: A++; MA: A++; **Acceptance rate: 19.70%**)
- C₁-2020** Joint Task Offloading and Resource Allocation for Delay-sensitive Fog Networks
54th ICC 2020, June 2020.
(GGs: 2/A; CORE: B; LiveSHINE: A+; MA: A+; **Acceptance rate: 39.00%**)

- C₄-2019** Automatic Clustering of Attacks in Intrusion Detection Systems
16th IEEE AICCSA, June 2019.
(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, Jan. 2019.
(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.
(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.
(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

- 2021-2023** **PI:** 750,000 €, “AutoTrust” Project, **European Space Agency (ESA)**, EU
- 2020-2022** **PI:** 250,000 €, “Security and Privacy in Network Security” Project, **Huawei Technologies**, UK
- 2020-2021** **Co-PI:** 20,000 \$, “Energy/Delay-aware methods in IoE/Industry 4.0” Project, **UK-Ecuador**, UK
- 2020-2022** **PI:** 275,209 €, “PRISENODE” Project, **Marie Skłodowska-Curie Individual Fellowships**, EU
- 2018** **PI:** 5,000 €, “SDN/NFV Security in CDC” Project, Department of Mathematics, University of Padua, Italy
- 2018** **Award:** 53,000 €, Department of Mathematics, University of Padua, Italy
- 2016** **Award:** 19,500 €, Department of “Enzo Ferrari”, University of Modena and Reggio Emilia, Modena, Italy
- 2015** **Talented Grant:** 650 €, Accommodation Flagship Conference, (ICC), Sapienza University of Rome, Italy
- 2012-2015** **Fellowship Award:** 58,500 €, 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)

- Nov. 2019** - 6G Innovation Centre (6GIC), University of Surrey, Guildford, UK
Present *Associate Professor (Senior Lecturer)*
Activities: Tackling Security and Privacy problems in SDN/NFVs, IoT in 6G Environment using reinforcement algorithms like ML/DL, mathematical solutions, and meta heuristics methods, write related industry grants.
- Jan. 2019** - Department of Computer Science, Ryerson University, Toronto, ON, Canada
Nov. 2019 *Senior Researcher*
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 Padua, Padua 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 (5GPPP 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 Engineering, University of Modena and Reggio Emilia, Modena, Italy
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** - EEE/ICS Department, 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 / Analyzer
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, TPC: technical Program Committee

AE: IEEE Transactions on Network and Service Management (**Impact Factor=4.195**), IEEE Transactions on Consumer Electronics (**Impact Factor=2.947**), IEEE Systems Journal (**Impact Factor=3.931**), Computer Networks (**Impact Factor=4.474**).

TPC: CCGRID '21, MobiCom '20 CryBlock, IEEE UCC '18-21, IEEE INFOCOM '18/19/20 CryBlock, IEEE INFOCOM '19 ICCN, GLOBECOM '17-21, IEEE SC2'17-20, IEEE ICNC '17-19, ICCE '19, IEEE ScalCom '17-21.

Software Engineering/Technical Skills

- **Scientific programming tools:** Matlab, AMPL, CPLEX, Mininet, iCloudSim, iFogSim, NS2
- **Programming Languages:** Python/bash, Java, C++, ASP.NET, C#, VB.NET
- **Operating Systems:** Linux, Apple OS X, Microsoft Windows, TinyOS

Referees

- **Prof. Rahim Tafazolli**, Regius Chair and Professor, Director of the 6GIC, Institute for Communication Systems, University of Surrey, UK. Tel: +44-(0)1483 689834, Email: r.tafazolli@surrey.ac.uk
- **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 Padua, Padua, Italy. Tel: +39-049-827-1488, Email: conti@math.unipd.it
- **Prof. Jemal Abawajy**, Professor, Deakin University, Geelong, Melbourne, VIC, 3220, Australia, Tel.: +61-3-5227-1768, Email: Jemal@deakin.edu.au