



## Mohammad Shojafar

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**GitHub :** <https://github.com/mshojafar/sourcecodes>

**Address:** Stag Hill, 5G & 6G Innovation Centre (5GIC & 6GIC) Institute for Communication Systems (ICS), University of Surrey, GU2 7XH Guildford (United Kingdom)

### ABOUT ME

Mohammad Shojafar (M'17-SM'19) is an Associate Professor (Senior Lecturer) and Intel Innovator working in the 5G & 6G Innovation Centre (5GIC & 6GIC) at the University of Surrey, United Kingdom. He is a PI of AutoTrust, a 750k euro 5G secure autonomous vehicular communication project supported by the European Space Agency (ESA) in 2021. Before joining 5GIC & 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. Also, he was a Senior Researcher at Ryerson University, Toronto (Canada) for 10 months working on a network security project at 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 to European H2020 "SUPERFLUIDITY" project. Mohammad was contributed to some Italian projects named "SAMMClouds", "V-FoG", "PRIN15" projects that 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 a 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 centres, and fog computing. He published over 120 refereed articles in prestigious venues such as IEEE TII, IEEE TCC, IEEE T-ITS, IEEE TNSM, IEEE IoT-J, IEEE Network, FGCS, IEEE INFOCOM, and IEEE ICC/GLOBECOM. 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 Systems Journal, Computer Networks, IET Communication, and Cluster Computing Journals. He is a Senior Member of IEEE, an ACM distinguished speaker, and a professional member of ACM.

### WORK EXPERIENCE

#### Senior Lecturer (Associate Professor)

**5GIC & 6GIC, University of Surrey** [ 15/10/2019 – Current ]

**Address:** Guildford (United Kingdom)

**City:** Guildford

**Country:** United Kingdom

- 5G/6G Communication network security (i.e., intrusion detection systems, mobile edge computing, and communication)
- Adversarial machine learning in Mobile data (i.e., adversarial ML, federated learning, reinforcement learning)
- Security in SDN/NFV and virtualized networks
- Security/Privacy in Fog/edge Computing and Fog data storage (i.e., data deduplication)
- Applied lightweight cryptography in 5G/6G network (i.e., distributed ledger, blockchain, lattice-based methods, QKD)

**Senior Researcher (Senior PostDoc)**

**Ryerson University** [ 01/01/2019 – 15/10/2019 ]

**Address:** Toronto (Canada)

**City:** Toronto

**Country:** Canada

**My responsibilities:**

- Contribute to the acquisition, set up, maintenance and integration of the SDN/NFV/SD-WAN and Cloud infrastructure
- Security Network monitoring and measurement, including, e.g., resource provisioning, performance analysis and modeling of SD-WAN
- Analytical Modelling and mathematical analysis of the security issues in Blockchain
- Analysis of SD-WAN Integrated with Blockchain and IoT data management and identify vulnerabilities, attacks, and countermeasures to preserve accountability

**Senior Researcher**

**University of Padua** [ 01/01/2018 – 01/01/2019 ]

**Address:** Padova (Italy)

**City:** Padua

**Country:** 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

**Senior Researcher**

**CNIT (Consorzio Nazionale Interuniversitario per le Telecomunicazioni)** [ 01/12/2016 – 31/01/2018 ]

**Address:** Rome (Italy)

**City:** Rome

**Country:** 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.

**Research Associate (PostDoc)**

*University of Modena and Reggio Emilia* [ 01/12/2015 – 01/12/2016 ]

Address: Modena (Italy)

City: Modena

Country: 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.

**PhD Student (Research Assistant)**

*Sapienza University of Rome* [ 01/11/2012 – 20/05/2016 ]

Address: Rome (Italy)

City: Rome

Country: 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

**Software Programmer**

*National Iran Oil Company (NIOC)* [ 01/04/2012 – 31/10/2012 ]

Address: Tehran (Iran)

City: Tehran

Country: 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

**Computer Science Lecturer**

[ 22/09/2008 – 05/06/2012 ]

Address: Sowmesara (Iran)

City: Tehran

Country: Iran

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

## Software Programmer

*Rahyab Rayaneh Gostar sub-firm of Tidewater ltd co.* [ 01/04/2008 – 31/12/2008 ]

Address: Tehran (Iran)

City: Tehran

Country: 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.

## Computer Systems Analyzer

*Shibkaran Construction Co* [ 02/10/2004 – 31/05/2006 ]

Address: Sary (Iran)

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

## Computer Systems Analyzer

*Medical University* [ 01/06/2003 – 22/09/2003 ]

Address: 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

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### Information and Communications Technology

*Sapienza University of Rome* [ 01/11/2012 – 20/05/2016 ]

Address: Rome (Italy)

Field(s) of study: Engineering and engineering trades

National classification: Advanced university studies (Doctorate)

- 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

### Computer Science (Software)

*Qazvin Islamic Azad University* [ 22/09/2007 – 15/09/2010 ]

Address: Qazvin (Iran)

Field(s) of study: Computing

National classification: University studies (Master)

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

## **Computer Science (Software)**

*Iran University Science and Technology* [ 22/09/2001 – 04/12/2006 ]

Address: Tehran (Iran)

Field(s) of study: Computing

National classification: University studies (Bachelor)

- 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

## **Certified Ethical Hacker (CEH)**

*Sharif University of Technology* [ 01/06/2012 – 12/10/2012 ]

Address: Tehran (Iran)

Field(s) of study: Computing

National classification: Upper secondary education

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

## **JAVA J2SE Developer**

*Sharif University of Technology* [ 01/04/2011 – 24/03/2012 ]

Address: Tehran (Iran)

Field(s) of study: Computing

National classification: Upper secondary education

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

## **LANGUAGE SKILLS**

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Mother tongue(s): **Persian**

Other language(s):

### **English**

**LISTENING C2 READING C2 WRITING C1**

**SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2**

### **Italian**

**LISTENING B1 READING A1 WRITING A1**

**SPOKEN PRODUCTION A1 SPOKEN INTERACTION A2**

### **Spanish**

**LISTENING A1 SPOKEN INTERACTION A1**

## **DIGITAL SKILLS**

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Knitro Optimization Toolbox / CPLEX / MATLAB / MININET

## PUBLICATIONS

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### **Machine Intelligence and Big Data Analytics for Cybersecurity Applications**

[2020]

<https://www.springer.com/gp/book/9783030570231>

Book - Springer

M. Yassine, **M. Shojaifar**, M. Alazab, Y. Baddi, "[Machine Intelligence and Big Data Analytics for Cybersecurity Applications](#)", Springer, ISBN: 978-3-030-57023-1, Page 534, 919, October 2020.

### **Blockchain for Cybersecurity and Privacy-Architectures, Challenges, and Applications**

[2020]

<https://www.taylorfrancis.com/books/9780429324932>

Book - Tylor & Francis

M. Yassine, **M. Shojaifar**, M. Alazab, I. Romdhani, "[Blockchain for Cybersecurity and Privacy-Architectures, Challenges, and Applications](#)", Taylor & Francis, ISBN: 978-0-42932-493-2, Page 404, 2 August 2020.

### **PPVF: Privacy-Preserving Protocol for Vehicle Feedback in Cloud-Assisted VANET**

[2021]

<https://doi.org/10.1109/TITS.2021.3117950>

IEEE Transactions on Intelligent Transportation Systems (T-ITS)

H. Cheng, **M. Shojaifar**, M. Alazab, R. Tafazolli, Y. Liu, "[PPVF: Privacy-Preserving Protocol for Vehicle Feedback in Cloud-Assisted VANET](#)", **IEEE Transactions on Intelligent Transportation Systems, (T-ITS)**, Impact Factor: 6.492, pp. 1-14, October 2021.

### **FED-IIoT: A Robust Federated Malware Detection Architecture in Industrial IoT**

[2021]

<https://doi.org/10.1109/TII.2020.3043458>

IEEE Transactions on Industrial Informatics (TII)

R. Taheri, **M. Shojaifar**, M. Alazab, R. Tafazolli, "FED-IIoT: A Robust Federated Malware Detection Architecture in Industrial IoT", **IEEE Transactions on Industrial Informatics (TII)**, Impact Factor: 9.112, Vol. 17, Issue 12, pp. 8442-8452, December 2021.

### **IADE: An Improved Differential Evolution Algorithm to Preserve Sustainability in a 6G Network**

[2021]

<https://doi.org/10.1109/TGCN.2021.3111909>

IEEE Transactions on Green Communications and Networking (TGCN)

Z. Zhou, **M. Shojaifar**, J. Abawajy, A.K. Bashir, "[IADE: An Improved Differential Evolution Algorithm to Preserve Sustainability in a 6G Network](#)", **IEEE Transactions on Green Communications and Networking, (TGCN)**, pp. 1-14, September 2021.

### **RSS: An energy-efficient approach for securing IoT service protocols against the DoS attack**

[2021]

<https://doi.org/10.1109/IJOT.2020.3023102>

IEEE Internet of Thing Journal (IoTJ)

M. Ghahramani, R. Javidan, **M. Shojaifar**, R. Taheri, M. Alazab, R. Tafazolli, "[RSS: An energy-efficient approach for securing IoT service protocols against the DoS attack](#)", **IEEE Internet of Thing Journal (IoTJ)**, Impact Factor: 9.936, Vol. 8, Issue 5, March 2021.

### **Adaptive Computing-plus-Communication Optimization Framework for Multimedia Processing in Cloud Systems**

[2020]

<http://dx.doi.org/10.1109/TCC.2016.2617367>

IEEE Transactions on Cloud Computing (TCC)

**M. Shojaifar**, C. Canali, R. Lancellotti, J. H. Abawajy, "[Adaptive Computing-plus-Communication Optimization Framework for Multimedia Processing in Cloud Systems](#)", IEEE Transactions on Cloud Computing, (TCC), Impact Factor: 4.714, Vol. 8, Iss. 4, pp. 1162-1175, December 2020.

### **A priority, power and traffic-aware virtual machine placement of IoT applications in cloud data centers**

[2021]

<https://doi.org/10.1016/j.sysarc.2021.101996>

Elsevier - Journal of Systems Architecture

S. Omer, S. Azizi, **M. Shojafar**, R. Tafazolli, "[A Priority, Power and Traffic-aware Virtual Machine Placement of IoT Applications in Cloud Data Centers](#)", Elsevier, **Journal of Systems Architecture (JSA)**, Impact Factor: 2.552, January 2021.

### **LEVER: Secure Deduplicated Cloud Storage with Encrypted Two-Party Interactions in Cyber-Physical Systems**

[2020]

<https://doi.org/10.1109/TII.2020.3021013>

IEEE Transactions on Industrial Informatics, (TII)

Z. Pooranian, **M. Shojafar**, S. Garg, R. Taheri, R. Tafazolli, "[LEVER: Secure Deduplicated Cloud Storage with Encrypted Two-Party Interactions in Cyber-Physical Systems](#)", **IEEE Transactions on Industrial Informatics, (TII)**, Impact Factor: 9.112, pp. 1-10, September 2020.

### **Neural Architecture Search for Robust Networks in 6G-enabled Massive IoT Domain**

[2020]

<https://doi.org/10.1109/JIOT.2020.3040281>

IEEE Internet of Thing Journal (IoTJ)

E. Wang, S.P. Xu, Ch. Chen, S. Kumari, **M. Shojafar**, M. Alazab "[Neural Architecture Search for Robust Networks in 6G-enabled Massive IoT Domain](#)", **IEEE Internet of Thing Journal (IoTJ)**, Impact Factor: 9.936, November 2020.

### **Voice-Transfer Attacking on Industrial Voice Control Systems in 5G-Aided IIoT Domain**

[2020]

<https://doi.org/10.1109/TII.2020.3023677>

IEEE Transactions on Industrial Informatics, (TII)

E.K. Wang, Ch.M. Chen, S. Kumari, **M. Shojafar**, M.S. Shamim, "[Voice-Transfer Attacking on Industrial Voice Control Systems in 5G-Aided IIoT Domain](#)", **IEEE Transactions on Industrial Informatics, (TII)**, Impact Factor: 9.112, Vol. PP, Iss. 99, pp. 1-8, September 2020.

### **HDMA: Hybrid D2D Message Authentication Scheme for 5G-enabled VANET**

[2020]

<https://doi.org/10.1109/TITS.2020.3013928>

IEEE Transactions on Intelligent Transportation Systems (T-ITS)

P. Wang, Ch. Chen, S. Kumari, **M. Shojafar**, R. Tafazolli, Y. Liu, "[HDMA: Hybrid D2D Message Authentication Scheme for 5G-enabled VANET](#)", **IEEE Transactions on Intelligent Transportation Systems, (T-ITS)**, Impact Factor: 6.319, pp. 1-10, August 2020.

### **GRVMP: A Greedy Randomized Algorithm for Virtual Machine Placement in Cloud Data Centers**

[2020]

<https://doi.org/10.1109/JSYST.2020.3002721>

IEEE System Journal (IEEE SJ)

S. Azizi, **M. Shojafar** J. Abawajy, R. Buyya, "[GRVMP: A Greedy Randomized Algorithm for Virtual Machine Placement in Cloud Data Centers](#)", **IEEE System Journal (IEEE SJ)**, Impact Factor: 3.987, June 2020.

### **Priority, Network and Energy-aware Placement of IoT-based Application Services in Fog-Cloud Environments**

[2020]

<https://doi.org/10.1049/iet-com.2020.0007>

IET Communications

H.O. Hassan, S. Azizi, **M. Shojafar** "[Priority, Network and Energy-aware Placement of IoT-based Application Services in Fog-Cloud Environments](#)", **IET Communications**, Impact Factor: 1.664, Vol. 14, Iss. 13, pp. 2117-2129, July 2020.

### **TEL: Low-Latency Failover Traffic Engineering in Data Plane**

[2020]

<https://arxiv.org/pdf/2009.13640>

IEEE Transactions on Network and Service Management (TNSM)

H. Mostafaei, **M. Shojafar**, M. Conti, "[TEL: Low-Latency Failover Traffic Engineering in Data Plane](#)", **IEEE Transactions on Network and Service Management (TNSM)**, **Impact Factor: 3.878**, pp. 1-12, September 2020.

### **On Defending Against Label Flipping Attacks on Malware Detection Systems**

[2020]

<https://doi.org/10.1007/s00521-020-04831-9>

Neural Computing and Applications, (NCAA)

R. Taheri, **M. Shojafar**, Z. Pooranian, A. Miri, M. Conti, "[On Defending Against Label Flipping Attacks on Malware Detection Systems](#)", Springer, **Neural Computing and Applications, (NCAA)**, **Impact Factor: 4.774**, March 2020.

### **Can Machine Learning Model with Static Features be Fooled: an Adversarial Machine Learning Approach**

[2020]

<https://doi.org/10.1007/s10586-020-03083-5>

Cluster Computing, (CLUS)

R. Taheri, R. Javidan, **M. Shojafar**, Vinod P., M. Conti, "[Can Machine Learning Model with Static Features be Fooled: an Adversarial Machine Learning Approach](#)", Springer, Springer, **Cluster Computing, (CLUS)**, **Impact Factor: 3.458**, March 2020.

### **FOCAN: A fog-supported smart city network architecture for management of applications in the internet of everything environments**

[2019]

<https://doi.org/10.1016/j.jpdc.2018.07.003>

Journal of Parallel and Distributed Computing (JPDC)

P.G.V. Naranjo, **M. Shojafar**, M. Conti, R. Buyya, "[FOCAN: A fog-supported smart city network architecture for management of applications in the internet of everything environments](#)", **Journal of Parallel and Distributed Computing (JPDC)**, **Impact Factor: 2.296**, Vol. 132, pp. 274-283, October 2019.

### **Joint Failure Recovery, Fault Prevention, and Energy-efficient Resource Management for Real-time SFC in Fog-supported SDN**

[2019]

<https://doi.org/10.1016/j.comnet.2019.07.006>

Computer Networks (COMNET)

M.M. Tajiki, **M. Shojafar**, S. Salsano, M. Conti, M. Singhal, "[Joint Failure Recovery, Fault Prevention, and Energy-efficient Resource Management for Real-time SFC in Fog-supported SDN](#)", Elsevier, **Computer Networks (COMNET)**, **Impact Factor: 3.111**, Vol. 162, pp. 1-16, October 2019.

### **LACO: Lightweight Three-factor Authentication, Access Control and Ownership Transfer Scheme for E-Health Systems in IoT**

[2019]

<https://doi.org/10.1016/j.future.2019.02.020>

Future Generation Computer Systems (FGCS)

S.F. Aghili, H. Mala, **M. Shojafar**, P. Peris-Lopez, "[LACO: Lightweight Three-factor Authentication, Access Control and Ownership Transfer Scheme for E-Health Systems in IoT](#)", Elsevier, **Future Generation Computer Systems (FGCS)**, **Impact Factor: 6.125**, Vol. 96, pp. 410-424, July 2019.

### **Software Defined Service Function Chaining with Failure Consideration for Fog Computing**

[2019]

<https://doi.org/10.1002/cpe.4953>

Concurrency and Computation: Practice and Experience (CPE)

M.M. Tajiki, **M. Shojafar**, B. Akbari, S. Salsano, M. Conti, "[Software Defined Service Function Chaining with Failure Consideration for Fog Computing](#)", Wiley, **Concurrency and Computation: Practice and Experience, CPE**, **Impact Factor: 1.447**, Vol. 31, Iss. 8, pp. 1-17, April 2019.



### **Energy-efficient Adaptive Resource Management for Real-time Vehicular Cloud Services**

[2019]

<http://dx.doi.org/10.1109/TCC.2016.2551747>

IEEE Transactions on Cloud Computing (TCC)

**M. Shojafar**, N. Cordeschi, E. Baccarelli, "[Energy-efficient Adaptive Resource Management for Real-time Vehicular Cloud Services](#)", **IEEE Transactions on Cloud Computing (TCC)**, Impact Factor: **4.714**, Vol. 7, Iss. 1, pp. 196-209, March 2019.

### **Joint Energy Efficient and QoS-aware Path Allocation and VNF Placement for Service Function Chaining**

[2019]

<https://doi.org/10.1109/TNSM.2018.2873225>

IEEE Transactions on Network and Service Management (TNSM)

M.M. Tajiki, S. Salsano, **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 (TNSM)**, Impact Factor: **3.878**, Vol. 16, Iss. 1, pp. 374-388, March 2019.

### **An Approach to Balance Maintenance Costs and Electricity Consumption in Cloud Data Centers**

[2018]

<https://doi.org/10.1109/TSUSC.2018.2838338>

IEEE Transactions on Sustainable Computing (TSUSC)

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)**, Vol. 3, Iss. 4, pp. 274-288, Oct.-Dec. 2018.

### **CECT: computationally efficient congestion-avoidance and traffic engineering in software-defined cloud data centers**

[2018]

<https://doi.org/10.1007/s10586-018-2815-6>

Cluster Computing (CLUS)

M. M. Tajiki, B. Akbari, **M. Shojafar**, S. H. Ghasemi, M. L. Barazandeh, N. Mokari, L. Chiaraviglio, M. Zink "[CECT: computationally efficient congestion-avoidance and traffic engineering in software-defined cloud data centers](#)", Springer, **Cluster Computing (CLUS)**, Impact Factor: **3.458**, Vol. 21, Iss. 4, December 2018.

### **Joint Minimization of the Energy Costs from Computing, Data Transmission, and Migrations in Cloud Data Centers**

[2018]

<https://doi.org/10.1109/TGCN.2018.2796613>

IEEE Transactions on Green Communications and Networking (TGCN)

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 (TGCN)**, Vol. 2, Iss. 2, pp. 580-595, June 2018.

### **Fog of Everything: Energy-efficient Networked Computing Architectures, Research Challenges, and a Case Study**

[2017]

<https://doi.org/10.1109/ACCESS.2017.2702013>

IEEE Access

E. Baccarelli, P.G.V. Naranjo, M. Scarpiniti, **M. Shojafar**, J. H. Abawajy, "[Fog of Everything: Energy-efficient Networked Computing Architectures, Research Challenges, and a Case Study](#)", **IEEE Access**, Impact Factor: **4.098**, Vol. 5, Iss. 2, pp. 9882-9910, May 2017.

### **FLAPS: Bandwidth and Delay-efficient Distributed Data Searching in Fog-supported P2P Content Delivery Networks**

[2017]

<https://doi.org/10.1007/s11227-017-2082-y>

Journal of Supercomputing

**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**), Impact Factor: **2.469**, Vol. 73, Iss. 12, pp. 5239-5260, May 2017.

### **P-SEP: a prolong stable election routing algorithm for energy-limited heterogeneous fog-supported wireless sensor networks**

[2017]

<http://dx.doi.org/10.1007/s11227-016-1785-9>

Journal of Supercomputing

P.G. V. Naranjo, **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](#)), **Impact Factor: 2.469**, Vol. 73, Iss. 2, pp. 733-755, February 2017.

### **Energy-efficient Dynamic Traffic Offloading and Reconfiguration of Networked Datacenters for Big Data Stream Mobile Computing: Review, Challenges, and a Case Study**

[2016]

<http://dx.doi.org/10.1109/MNET.2016.7437025>

IEEE Network Magazine

E. Baccarelli, N. Cordeschi, A. Mei, M. Panella, **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*, **Impact Factor: 8.808**, Vol. 30, Iss. 2, pp. 54-61, **March-April 2016**.

### **ALATO: An Efficient Intelligent Algorithm for Time Optimization in an Economic Grid Based on Adaptive Stochastic Petri Net**

[2015]

<http://dx.doi.org/10.1007/s10845-013-0824-0>

Journal of Intelligent Manufacturing (JIMS)

**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)*, **Impact Factor: 4.311**, Vol. 26, No. 5, pp. 641-658, August 2015.

### **FUGE: A Joint Meta-heuristic Approach To Cloud Job Scheduling Algorithm Using Fuzzy Theory And A Genetic Method**

[2015]

<http://dx.doi.org/10.1007/s10586-014-0420-x>

Cluster Computing

**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 (CLUS)*, **Impact Factor: 3.458**, Vol. 18, Iss. 2, pp. 829-844, June 2015.

### **An Efficient and Distributed file search in Unstructured Peer-to-Peer Networks**

[2015]

<http://dx.doi.org/10.1007/s12083-013-0236-0>

Peer-to-Peer Networking and Applications (PPNA)

**M. Shojafar**, J.H. Abawajy, Z. Delkhah, A. Ahmadi, Z. Pooranian, A. Abraham, "[An Efficient and Distributed file search in Unstructured Peer-to-Peer Networks](#)", Springer, *Peer-to-Peer Networking and Applications (PPNA)*, **Impact Factor: 2.793**, Vol. 8, Iss. 1, pp. 120-136, January 2015.

### **Computation Offloading Strategy in Heterogeneous Fog Computing with Energy and Delay Constraints**

[2020]

<https://doi.org/10.1109/ICC40277.2020.9148852>

IEEE ICC 2020

M. Mukherjee, **M. Shojafar**, et al. "[Computation Offloading Strategy in Heterogeneous Fog Computing with Energy and Delay Constraints](#)", The **55th** IEEE International Conference on Communications ([IEEE ICC 2020](#)), Dublin, Ireland, pp. 1-6, 2020.

### **Automatic Clustering of Attacks in Intrusion Detection Systems**

[2019]

<https://doi.org/10.1109/AICCSA47632.2019.9035238>

16th IEEE/ACS 2019

**M. Shojafar**, Rahim Taheri, Zahra Pooranian, Reza Javidan, Ali Miri, Yaser Jararweh, "[Automatic Clustering of Attacks in Intrusion Detection Systems](#)", The **16th** ACS/IEEE International Conference on Computer Systems and Applications, ([ACS/IEEE 2019](#)), Abu Dhabi, UAE, 3-7 November 2019.

### **A New Secure Data Dissemination Model in Internet of Drones**

[2019]

<https://doi.org/10.1109/ICC.2019.8761372>

IEEE ICC 2019

Sh. Aggarwal, **M. Shojafar**, N. Kumar, M. Conti, "[A New Secure Data Dissemination Model in Internet of Drones](#)", The **53rd** IEEE International Conference on Communications, ([ICC 2019](#)), Shanghai, China, 20-24 May 2019.

### **Joint Task Offloading and Resource Allocation for Delay-sensitive Fog Networks**

[2019]

<https://doi.org/10.1109/ICC.2019.8761239>

IEEE ICC 2019

M. Mukherjee, S. Kumar, **M. Shojafar**, Q. Zhang, C.X. Mavromoustakis, "[Joint Task Offloading and Resource Allocation for Delay-sensitive Fog Networks](#)", The **53rd** IEEE International Conference on Communications, ([ICC 2019](#)), Shanghai, China, 20-24 May 2019.

### **Energy-efficient Path Allocation Heuristic for Service Function Chaining**

[2018]

<https://doi.org/10.1109/ICIN.2018.8401618>

21th IEEE ICIN

M.M. Tajiki, **M. Shojafar**, S. Salsano, M. Shojafar, L. Chiaraviglio, B. Akbari, "[Energy-efficient Path Allocation Heuristic for Service Function Chaining](#)", The **21st** IEEE Conference on Innovations in Clouds, Internet and Networks, ([ICIN 2018](#)), Paris, France, pp. 1-8, 2018.

### **P5G: A Bio-inspired Algorithm for the Superfluid Management of 5G Networks**

[2017]

<https://doi.org/10.1109/GLOBECOM.2017.8254683>

18th IEEE GLOBECOM

**M. Shojafar**, L. Chiaraviglio, N. Blefari-Melazzi, S. Salsano, "[P5G: A Bio-inspired Algorithm for the Superfluid Management of 5G Networks](#)", The **18th** IEEE International Global Communications Conference ([IEEE GLOBECOM 2017](#)), Singapur, pp. 1-6, 2017.

### **Minimizing Computing-plus-Communication Energy Consumptions in Virtualized Networked Data Centers**

[2016]

<http://dx.doi.org/10.1109/ISCC.2016.7543890>

21th IEEE ISCC

**M. Shojafar**, C. Canali, R. Lancellotti, E. Baccarelli, "[Minimizing Computing-plus-Communication Energy Consumptions in Virtualized Networked Data Centers](#)", The **21th** IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing ([IEEE ISCC 2016](#)), Messina, Italy, pp. 1137-1144, 2016.

### **An Energy-aware Scheduling Algorithm in DVFS-enabled Networked Data Centers**

[2016]

<http://dx.doi.org/10.5220/0005928903870397>

CLOSER 2016

**M. Shojafar**, C. Canali, R. Lancellotti, S. Abolfazli, "[An Energy-aware Scheduling Algorithm in DVFS-enabled Networked Data Centers](#)", The **6th** International Conference on Cloud Computing and Services Science ([CLOSER 2016](#)), Rome, Italy, Vol. 2, pp. 387-397, 2016.

### **TETS: A Genetic-based Scheduler in Cloud Computing to Decrease Energy and Makespan**

[2015]

[http://dx.doi.org/10.1007/978-3-319-27221-4\\_9](http://dx.doi.org/10.1007/978-3-319-27221-4_9)

15th IEEE HIS

**M. Shojafar**, A.A.R Hosseinabadi, M. Kardgar, Sh. Shamsirband, "[TETS: A Genetic-based Scheduler in Cloud Computing to Decrease Energy and Makespan](#)", The **15th** International Conference on Hybrid Intelligent Systems ([HIS 2015](#)), Advances in Intelligent Systems and Computing 420, Seoul, South Korea, pp. 103-115, 2015.

### **Adaptive Energy-Efficient QoS-Aware Scheduling Algorithm for TCP/IP Mobile Cloud**

[2015]

<http://dx.doi.org/10.1109/GLOCOMW.2015.7413988>

16th IEEE GLOBECOM

**M. Shojafar**, N. Cordeschi, J.H. Abawajy, E. Baccarelli, "[Adaptive Energy-Efficient QoS-Aware Scheduling Algorithm for TCP/IP Mobile Cloud](#)", The **16th** IEEE International Global Communications Conference ([IEEE GLOBECOM WORKSHOP 2015](#)), San Diego, CA, USA, pp. 1-6, 2015.

### **Energy-saving adaptive computing and traffic engineering for real-time-service data centers**

[2015]

<http://dx.doi.org/10.1109/ICCW.2015.7247442>

50th IEEE ICC

**M. Shojafar**, N. Cordeschi, D. Amendola, E. Baccarelli, "[Energy-saving adaptive computing and traffic engineering for real-time-service data centers](#)", The **50th** IEEE International Conference on Communications ([IEEE ICC WORKSHOP 2015](#)), London, UK, pp. 1800-1806, 2015.

## NETWORKS AND MEMBERSHIPS

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### Memberships

#### *Editorial Member*

- **Associate Editor**, IEEE, [IEEE Transactions on Network and Service Management \(TNSM\)](#) (JCR IF 2020: 4.195)
- **Associate Editor**, IEEE, [IEEE Transactions on Consumer Electronics](#) (JCR IF 2018: 2.739)
- **Associate Editor**, IEEE - [IEEE Systems Journal \(ISJ\)](#) (JCR IF 2019: 3.987)
- **Associate Editor**, Elsevier - [Computer Networks \(COMNET\)](#) (JCR IF 2019: 3.111)
- **Associate Editor**, IET, [IET Communications](#) (JCR IF 2018: 1.664)
- **Associate Editor**, Springer, [Cluster Computing](#) (JCR IF 2018: 3.458)
- **Associate Editor**, Springer, [Peer-to-Peer Networking and Applications](#) (JCR IF 2019: 3.700)
- **Associate Editor**, MDPI, [Sensors](#) (JCR IF 2018: 3.275)

#### *Technical Committee (TPC) Member*

[IEEE PST '21](#), [IEEE/ACM UCC '21](#), IEEE ScalCom '21, [IEEE/ACM CCGRID '21](#), IEEE GLOBECOM '21

[ACM MobiCom '20 - CryBlock](#), [IEEE INFOCOM '20](#) - ICCN, IEEE INFOCOM '20 - BlockSecSDN, IEEE ICCCN'20, IEEE ICC'20 - GCSN Symposium, IEEE ICNC'20, IEEE CCGRID'20 - ICFC'20, IEEE ICCCN'20 - Green Networking and Sustainable Computing (GREEN), IEEE ICDCS '20- (Network Meets Intelligent Computations)-NMIC

IEEE ICC '19, IEEE GLOBECOM'19, IEEE AINA '19, IEEE ICCE '19, IEEE ICNC '19, IEEE ICNSC '19, IEEE INFOCOM '19 ICCCN, IEEE INFOCOM '19 CryBlock,

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 Mobile Computing
- IEEE Transactions on Big Data
- IEEE Transactions on Systems, Man and Cybernetics: Part A: Systems and Humans
- IEEE Network Magazine
- IEEE Communications Magazine
- IEEE Computer Communication Magazine
- IEEE Internet of Things Journal
- IEEE IT Professional
- Elsevier Computer Networks
- Elsevier Future Generation Computer Systems
- Elsevier Journal of Parallel and Distributed Computing
- Elsevier Computer Communications
- Elsevier Applied Soft Computing

## RECOMMENDATIONS

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- [Prof. Rahim Tafazolli](#), Regius Professor, FREng, FIET, WWRF Fellow, Head of the Institute for Communication Systems (ICS), Director of the 6G Innovation Centre (6GIC), University of Surrey, Guildford, United Kingdom. Tel: +44 (0)1483 689834, Email: [r.tafazolli@surrey.ac.uk](mailto: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](mailto:rbuyya@unimelb.edu.au)
- [Prof. Mukesh Singhal](#), Chancellor's Professor, University of California, Merced, USA. Tel: +1-209-228-4344, Email: [msinghal@ucmerced.edu](mailto: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](mailto: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](mailto: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](mailto:enzo.baccarelli@uniroma1.it)

## PROJECTS

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### Projects

- **EU- ESA 2021 AUTOTRUST: A Transport and Logistics Demonstration Project (750K euro)**
- **EU H2020 PRISENODE: Privacy- and security-aware solutions in Software-defined Fog Data Center (270K euro)**
- 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)

## HONOURS AND AWARDS

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### Honours and awards

- **Grant:** 750,000 Euro, European Space Agency, [AUTOTRUST: A Transport and Logistics Demonstration Project](#) (2021-2023)- **(Principal Investigator)**
- **Grant:** 20,000 US-Dollar, Energy and delay provisioning in IoT and Industry 4.0, (2021 for 18 months) - **(Co-PI)**
- **Grant:** 275,000 Euro, European Commission, [Marie Curie Individual Fellowship](#) (2019-2021)- **(Principal Investigator)**
- **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:** 19,500 Euro, Department of "Enzo Ferrari", University of Modena and Reggio Emilia, Modena, Italy
- **Award (PI):** 54,000 Euro+5000 euro supporting, University of Padua, Padua, Italy
- **Award:** 5,000 Euro, Principle Investigator, Research Fund for University of Padua, Padua, Italy
- **Outstanding Reviewer** 2017 in FGCS, JPDC (Elsevier Publisher)
- Among the top 1000 in the Iranian National University Exam (500,000 participants), 2001.

## OTHER SKILLS

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### Other skills

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

## PRESENTATIONS

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### Presentations

#### Keynote Presentations

- (2021) Keynote speaker in Engineering, Technology & Sciences, Rai University, India Link: [https://www.raiversity.edu/conference\\_2021/](https://www.raiversity.edu/conference_2021/)
- (2017) SPRITZ-CLUSIT Workshop on Future Systems Security and Privacy, Padua, Italy Link: <http://sprit.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

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### Citations

- **Google Scholar:** Citations: 4600+, H-Index: 33
- **SCOPUS:** Citations: 2900+, H-Index: 28

## PHD/MSC STUDENTS

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### Postdoc/PhD/Msc Students

- [Zahra Pooranian](#) (2020+) -- **Current Postdoc**
- [Parya Hajimirzaei](#) (2020+) -- **Ph.D. Supervised**
- [Sanaz Soltani](#) (2020+) -- **Ph.D. Supervised**
- Hongyuan Cheng (2020+) -- **Ph.D. Co-supervised**
- [Bushra Jamil](#) (2020+) -- **Ph.D. Co-supervised**
- [Mohammad Mahdi Tajiki](#) (2017-2019) -- **Ph.D. Co-supervised**
- [Paola Vinueza](#) (2015-2018) -- **Ph.D. Co-supervised**
- [Rahim Taheri](#) (2017-2020) -- **Ph.D. Co-supervised**
- [Farhad Aghili](#) (2012-2018) -- **Ph.D. Co-supervised**
- [Meysam Ghahramani](#) (2016-2021) -- **Ph.D. Co-supervised**
  
- [Rahim Taheri](#) (2020-2021) -- **Postdoc supervised**
- Domenico Paravati (2015) -- **MSc. Co-supervised**
- Massimo Biancifiori (2014) -- **MSc. Co-supervised**
- Saeed Javanmardi (2013) -- **MSc. Co-supervised**
- Ali Ahmadi Douchali (2012) -- **MSc. Co-supervised**