



## Mohammad Shojafar

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**Date of birth:** 05/09/1983 | **Nationality:** Iranian | **Gender:** Male | **Phone number:** (+44) 01483689480 (Work) | **Email address:** [m.shojafar@surrey.ac.uk](mailto:m.shojafar@surrey.ac.uk) |

**Website:** [www.mshojafar.com](http://www.mshojafar.com) | **LinkedIn:**

<https://www.linkedin.com/in/mohammad-shojafar-6b673332/> | **GitHub:**

<https://github.com/mshojafar/sourcecodes> | **Twitter:**

<https://twitter.com/mshojafar?lang=en> | **YouTube:**

<https://www.youtube.com/user/mohammadshojafar> | **Skype:** m.shojafar |

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

### About me:

Mohammad Shojafar is an Associate Professor in Network Security, an Intel Innovator, a Senior IEEE member, an ACM distinguished speaker, a Sustainability Fellow at the Institute for Sustainability, a Fellow of the Higher Education Academy, working in the 5G & 6G Innovation Centre (5G/6GIC) at the University of Surrey, UK. He was a Senior Researcher and a Marie Curie Fellow in the SPRITZ Security and Privacy Research group at the University of Padua, Italy. He was a Senior Researcher working on a network security project (~11 months) jointly with Toronto Metropolitan University (Ryerson University) and TELUS Communications in Toronto, Canada, in 2019. Also, he was a CNIT Senior Researcher at the University of Rome Tor Vergata and contributed to the 3GPPP European H2020 "SUPERFLUIDITY" project.

Dr. Mohammad secured more than 1.5M€ for EU and UK projects such as ESKMARALD project (funded by NCSC-UK), APTd5G project (funded by EPSRC/UKI-FNI), AUTOTRUST (funded by the European Space Agency), and PRISENODE project (funded by Horizon 2020 European Commission). He contributed to some Italian projects in telecommunications like GAUCHO - A Green Adaptive Fog Computing and Networking Architecture (€400k), S2C: Secure, Software-defined Cloud (€30k), and SAMMClouds- Secure and Adaptive Management of Multi-Clouds (€30k) collaborating among TIM mobile Group and Italian universities.

He received a Ph.D. from the Sapienza University of Rome, Rome, Italy, in 2016 with an "Excellent" degree. He received the honored BSc in CS at Iran University of Science and Technology, Tehran, Iran, in 2006. He was a programmer/software analyzer at the National Iranian Oil Company (NIOC) and Tidewater Ltd in Iran from 2008 to 2013.

## WORK EXPERIENCE

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15/10/2019 – CURRENT Guildford, United Kingdom

**SENIOR LECTURER (ASSOCIATE PROFESSOR) 5GIC & 6GIC, UNIVERSITY OF SURREY**

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I am running PI/COI of several UK/EU projects, such as AUTOTRUST, APTd5G, ESKMARALD, PASSCOINFOG, and the activities are listed below:

1. 5G/6G Communication network security (i.e., intrusion detection systems, mobile edge computing, and communication)
2. Adversarial machine learning in Mobile data (i.e., adversarial ML, federated learning, reinforcement learning)
3. Security in SDN/NFV and virtualized networks
4. Security/Privacy in Fog/edge Computing and Fog data storage (i.e., data deduplication)

5. Applied lightweight cryptography in 5G/6G network (i.e., distributed ledger, blockchain, lattice-based methods, QKD)

**Address** Guildford, United Kingdom

01/01/2019 – 15/10/2019 Toronto, Canada

**SENIOR RESEARCHER (SENIOR POSTDOC)** TORONTO METROPOLITAN UNIVERSITY (RYERSON UNIVERSITY)

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I was working with TELUS on securing of traffic engineering data and validating it through SDN/NFV and cloud models. The details are listed below:

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

**Address** Toronto, Canada

01/01/2018 – 01/01/2019 Padua, Italy

**SENIOR RESEARCHER** UNIVERSITY OF PADUA

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I was contributing PRISENODE and SDN security projects. The details of my responsibilities are listed below:

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

**Address** Padova, Italy

01/12/2016 – 31/01/2018 Rome, Italy

**SENIOR RESEARCHER** CNIT (CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI)

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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.

**Address** Rome, Italy

01/12/2015 – 01/12/2016 Modena, Italy

**RESEARCH ASSOCIATE (POSTDOC)** UNIVERSITY OF MODENA AND REGGIO EMILIA

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Work on the project SAMMClouds (Secure and Adaptive Management of Multi-Clouds) funded by Italian Education Ministry

**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 about three main issues:

1. Monitoring and management of IaaS cloud and multi-cloud systems
2. Resource management in SaaS multi-cloud systems
3. Data protection and security in cloud systems

**My responsibilities:**

1. Propose, and implement some analytical techniques and novel solutions using AMPL (Knitro, MOSEK, and IBM CPLEX) optimizers.
2. Incorporate the programming language (C++/python) using a bash script to formulate, test, deploy, and maintain the multi-cloud resource management issues.
3. Implement VMs managing algorithm using Docker and Oracle Virtual box in some tasks.

**Address** Modena, Italy

01/11/2012 – 20/05/2016 Rome, Italy

**PHD STUDENT (RESEARCH ASSISTANT)** SAPIENZA UNIVERSITY OF ROME

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**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

**Address** Rome, Italy

01/04/2012 – 31/10/2012 Tehran, Iran

**SOFTWARE PROGRAMMER** NATIONAL IRAN OIL COMPANY (NIOC)

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**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

**Address** Tehran, Iran

01/04/2008 – 31/12/2008 Tehran, Iran

**SOFTWARE PROGRAMMER** RAHYAB RAYANEH GOSTAR SUB-FIRM OF TIDEWATER LTD CO.

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

GCOMS is a system under the direction of ports and maritime organizations in the non-container terminals with the slogan of creating unity procedures in the port operations cycle at nine important 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 test scenarios and developing test programs 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, an intelligent combination of hardware and software as an exhaustive resource for managing and leading container operations designed and implemented for administering Iran's most extensive container port.

**My responsibility** was to test the program and troubleshoot the problems that may happen in the connection exploited black box software testing. We monitored the testing and the test environment, often using the Ranorex tool for this task, and often gathered performance metrics by writing and executing test scripts and bug reports.

**Address** Tehran, Iran

02/10/2004 – 31/05/2006

**COMPUTER SYSTEMS ANALYZER** SHIBKARAN CONSTRUCTION CO

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- Install network components and operating systems (WIN 2003 serv., 15 nodes winXP, internal switch)

- Troubleshooting network issues (hardware, software or network faults)

**Address** Sary, Iran

01/06/2003 – 22/09/2003

## **COMPUTER SYSTEMS ANALYZER** MEDICAL UNIVERSITY

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- 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

**Address** Sary, Iran

## ● **EDUCATION AND TRAINING**

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01/11/2012 – 20/05/2016 Rome, Italy

## **INFORMATION AND COMMUNICATIONS TECHNOLOGY** Sapienza University of Rome

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

**Address** Rome, Italy | **Website** <https://phd.uniroma1.it/web/pagina.aspx?i=3552&l=EN&p=206> |

**Field of study** Engineering and engineering trades |

**National classification** Advanced university studies (Doctorate)

22/09/2001 – 04/12/2006 Tehran, Iran

## **COMPUTER SCIENCE (SOFTWARE)** Iran University Science and Technology

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- 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

**Address** Tehran, Iran | **Field of study** Computing | **National classification** University studies (Bachelor)

01/06/2012 – 12/10/2012 Tehran, Iran

## **CERTIFIED ETHICAL HACKER (CEH)** Sharif University of Technology

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

**Address** Tehran, Iran | **Field of study** Computing | **National classification** Upper secondary education

01/04/2011 – 24/03/2012 Tehran, Iran

## **JAVA J2SE DEVELOPER** Sharif University of Technology

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

**Address** Tehran, Iran | **Field of study** Computing | **National classification** Upper secondary education

## ● LANGUAGE SKILLS

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Mother tongue(s): **PERSIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C2	C2	C1
<b>ITALIAN</b>	B1	A1	A1	A2	A1
<b>SPANISH</b>	A1			A1	

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

## ● DIGITAL SKILLS

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Knitro Optimization Toolbox | CPLEX | MATLAB | MININET | C, C++ C# | Advanced knowledge of information and system security | Computer Networks and Computer Protocols | COMPUTER NETWORK | Cloud Networking

## ● ADDITIONAL INFORMATION

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### PROJECTS

01/01/2023 – 31/12/2024

**ESKMARALD: Enhanced Security of the AKMA on 5G (COI: £311,000)** ESKMARALD looks at the cryptographic, security, and privacy guarantees of edge computing over mobile networks and related services, primarily as per 5G (5th Generation Mobile Networks)-related specifications. ESKMARALD will consider threat models and use formal analysis methods and tools for security protocols and cryptographic primitives.

01/01/2023 – 01/07/2023

**APTd5G: APT detection in 5G networks (COI: £40,000)** This pilot study focuses on Advanced Persistent Threats (APTs) detection in 5G/6G networks, drawing from realistic experimental implementations on the Surrey 5G testbed that go beyond a single intrusion scenario.

Link <https://www.ukifni.org/call-for-pilot-study-proposals-for-epsrc-uk-india-future-networks-initiative-uki-fni/>

01/02/2022 – CURRENT

**AUTOTRUST: A Secure 5G Transport and Logistics Demonstration (PI: €750,000)** This project aims to secure data traffic among autonomous vehicles through the SAT-5G communication and cloud systems. AutoTrust is a European Space Agency (ESA) funded project that secures €750,000 (~£650,000) and includes three British participants (the University of Surrey, University of Hertfordshire and RL Capital Auto Ltd). AutoTrust is authorised to be funded by UK Space Agency under the ARTES 4.0 SPL 5G.

Link <https://business.esa.int/space-and-5g-convergence-transport-logistics>

01/01/2020 – 31/12/2022

**PRISENODE: Privacy- and security-aware solutions in Software-defined Fog Data Center (PI: €275,000)** In this project, I integrate fog technology with SDDCs and design a scalable fog network to manage the cloud service demands and provide secure processing and traffic data privacy in SDDC. I named this project PRISENODE: Privacy- and security-aware solutions in Software-defined Fog Data Center. My project targets fog data center (FDC) which consists of SDN-enabled switches that are instantiated on an SDDC server and serve as edge switches (Fog Nodes; FNs). FNs accommodate small-size flows with limited response time and deliver high-user QoE. In this way, I design a fundamental tool (open-source software) and a holistic business model for privacy- and security-aware data traffic passed through SDN-enabled FDCs/CDCs.

Link <https://cordis.europa.eu/project/rcn/222120/factsheet/en>

## NETWORKS AND MEMBERSHIPS

Memberships *IEEE SENIOR Member*

*ACM SENIOR Member*

## HONOURS AND AWARDS

Honours and awards Permanent resident in Italy (obviously in EU) since Jan. 2018.

Global Talent Visa in the UK, since Jan. 2022 (APPLIED FOR Indefinite leave to remain application from 15 March 2023)

## PUBLICATIONS

[List of my publications on Google Scholar](#)

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## RECOMMENDATIONS

1. [Prof. Rahim Tafazolli](#), Regius Professor, FEng, 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)
2. [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)
3. [Prof. Mukesh Singhal](#), Chancellor's Professor, University of California, Merced, USA. Tel: +1-209-228-4344, Email: [msinghal@ucmerced.edu](mailto:msinghal@ucmerced.edu)
4. [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)