Curriculum Vitae- Amin Shahraki (www.shahraan.me)

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	ORCiD: [Click here](#)	*Citizenship: Iran*
		*(**Permanent residency of Norway**)*

RESEARCH INTERESTS

- ➢ Internet of Things
- ➢ 5G-6G Networks
- ➢ Deep Learning
- ➢ Machine Learning for Networking
- ➢ Online Machine Learning
- ➢ Deep Reinforcement Learning

EDUCATION

Fraunhofer IIS, Distributed systems and Artificial Intelligence Lab, Erlangen, Germany, November 2020- Now

- ➢ Postdoctoral researcher in Machine Learning for Networking

    - o *Remark 1: Fraunhofer is the is Europe's largest application-oriented research organization, ranked 10th and 61st in the field of computer science among all universities and research institutes in EU and the world respectively. ([Click here](#))*

    - o *Remark 2: The project is based on designing Intelligent IoT-Edge managed by Machine Learning techniques to use resources of weak devices for distributed Machine Learning Techniques e.g., Federated Learning*

    - o *Remark 3: The grant of the Postdoctoral position is provided by "The European Research Consortium for Informatics and Mathematics (ERCIM)" as one of the oldest consortium of EU aims to foster collaborative work within the European research community and to increase co-operation with European industry.*

University College Dublin (173th in the world), School of Computer Science,
Dublin, Ireland, May 2021- September 2021 (25%)

- ➢ Postdoctoral Researcher in Machine Learning for data analytics

    - o *Remark: I worked as a part-time employee (25%) on "Artificial Intelligence an advanced Data Analytics for Law enforcement agencies (AIDA)" project ([click here](#))". My focus was on developing Machine Learning techniques to analyze the data gathered from the network for digital forensics.*

University of Oslo, Department of Informatics, Oslo, Norway

- ➢ Ph.D. in Computer Networks, October 2016, November 2020

    - ➢ Ph.D. Thesis Title: Network Management in Internet of Things: From Establishing to Analysing
    - ➢ Supervisor: Øystein Haugen   *[Click here](#)*
    - ➢ Co-Supervisor: Ketil Stolen   *[Click here](#)*
    - ➢ Co-Supervisor: Amir Taherkordi   *[Click here](#)*

- Remark: *Three sub-topics covered by the PhD thesis including 1) Network Traffic Monitoring and analysis in IoT based on Statistical and ML methods 2) Network Topology Management in IoT based on ML 3) Resource utilization in IoT for Edge and related Computing paradigms based on ML*

University of Melbourne, School of Computing and Information Systems, Victoria, Australia

- Visiting fellow at CLOUDS Lab, Aug. 2019- Feb 2020 *Click here*

  - Supervisor: Distinguished Professor Rajkumar Buyya *Click here*

    - Remark: *Collaboration with CLOUDS Lab group, working on Fog and Edge Computing, QoS and Self-healing IoT network Infrastructures by Managed by Ml-based techniques*

Qazvin Islamic Azad University (QIAU), Qazvin, Iran

- M.Sc. in Information Technology Engineering (Computer Networks branch), September 2010-September 2012, **GPA: 18.27/20.**

  - Master Thesis Title: A new Hierarchical Distributed Management Clustering Protocol for WSNs.
  - Grade: **20/20**
  - Supervisor: M. Kuchaki Rafsanjani
  - Co-supervisor: A. Borumand Saeid

University of Applied Science and Technology, ACECR branch, Mashhad, Iran

- Bachelor Degree in Computer Software Engineering, January 2008-January 2010, **GPA: 16.43/20.**

  - Dissertation: Simulation of Prioritized Video on demand based on ATM networks with OPNET modeler
  - Grade: **20/20**
  - Supervisor: M. Sadeghi Zadeh

PEER-REVIEWED PUBLICATIONS	
	- **Amin Shahraki,** Mahmoud Abbasi**,** Amir Taherkordi**,** Anca Delia Jurcut, *Active Learning for Network Traffic Classification: A Technical Study,* IEEE Transactions on Cognitive Communications and Networking (**IEEE, IF:4.574, Q1**) *click here*
	- **Amin Shahraki,** Amir Taherkordi, Øystein Haugen, *TONTA: Trend-based Online Network Traffic Analysis for ad-hoc IoT Networks*, Computer Networks, 2021 (**Elsevier, IF: 4.474, Q1**) *click here*
	- **Amin Shahraki,** Amirhossein Taherkordi, Øystein Haugen, Frank Eliassen, *A Survey and Future Directions on Clustering: From WSNs to IoT and Modern Networking Paradigms,* IEEEE Transactions on Network and Service Management, 2021 (**IEEE, IF: 4.195, Q1**) *click here*

> *Remark: The paper focuses on Clustering Techniques (Reviewing more than 250 available Clustering method) and applying them to IoT networks to integrate related paradigms and technologies (5G, SDN and NFV, Fog and Edge, Blockchain). Also, we provide a comprehensive future direction to use clustering techniques to apply the paradigms and technologies to IoT*

> Iraj Lohrasinasab (*My master student*), **Amin Shahraki,** Amir Taherkordi, Anca Delia Jurct, *From Statistical- to Machine Learning-based Network Traffic Prediction*, Transactions on Emerging Telecommunications Technologies **(Wiley, IF: 2.683. Q2) (Accepted- In press)**

> Mahmoud Abbasi, **Amin Shahraki,** Amir Taherkordi, *Deep Reinforcement Learning for QoS Provisioning at the MAC Layer: A Survey,* Engineering Applications of Artificial Intelligence, 2021 **(Elsevier: IF: 6.212, Q1)** *click here*

> Mahmoud Abbasi, **Amin Shahraki,** Amir Taherkordi**,** *Deep Learning for Network Traffic Monitoring and Analysis (NTMA): A survey,* Computer Communications, 2021 **(Elsevier: IF: 3.167,Q1)** *click here*

> **Amin Shahraki,** Mahmoud Abbasi, Amir Taherkordi, Mohammed Koasar, *Internet Traffic Classification Using an Ensemble of Deep Convolutional Neural Networks,* ACM SIGCOMM 2021, Workshop on Flexible Networks (FlexNets'21): Artificial Intelligence Supported Network Flexibility and Agility, *click here*

> **Amin Shahraki,** Mahmoud Abbasi, Hamidreza Barzegar, Claus Pahl, *Synchronization Standards and Techniques in D2D- and V2V-Enabled Cellular Networks: An Overview,* Computers and Electrical Engineering, 2021 **(Elsevier, IF: 3.818, Q1)** *click here*

> **Amin Shahraki,** Mahmoud Abbasi, Øystein Haugen, *Boosting algorithms for network intrusion detection: A comparative evaluation of Real AdaBoost, Gentle AdaBoost and Modest AdaBoost,* Engineering Applications of Artificial Intelligence, 2020 **(Elsevier, IF: 6.212, Q1)** *click here*

> **Amin Shahraki,** Amirhossein Taherkordi, Øystein Haugen, Frank Eliassen, *Clustering Objectives in Wireless Sensor Networks: A Direction Analysis,* Computer Networks, 2020 **(Elsevier, IF: 4.474, Q1)** *click here*

> **Amin Shahraki,** Marius Geitle, Øystein Haugen, *A comparative node evaluation model for highly heterogeneous massive-scale IoT-Mist networks*, Transactions on Emerging Telecommunications Technologies, 2020 **(Wiley, IF: 2.683, Q2)** *click here*

> Amin Shahraki, Marjan Kuchaki Rafsanjani, Arsham Borumand Saeid, *Hierarchical distributed Management Clustering Protocol for Wireless Sensor Networks,* Telecommunication systems, 2017. **(Springer, IF: 2.314, Q2)** *click here*

> Marjan Kuchaki Rafsanjani, Atieh Rezaei, **Amin Shahraki,** Arsham Borumand Saeid, 2014, *QARIMA: A new approach to prediction in queue theory,* Applied Mathematics and Computation, 2014. **(Elsevier, IF: 4.091,Q1)** *click here*

> **Amin Shahraki**, Marjan Kuchaki Rafsanjani, Arsham Borumand Saeid, 2011, *A New Approach for Energy and Delay Trade-off Intra-Clustering*

Routing in WSNs, Computers & Mathematics with Applications, 2012 **(Elsevier, IF: 3.674,Q1)** *click here*

➢ **Amin Shahraki,** Øystein Haugen, *An Outlier Detection method to improve gathered datasets for Network Behavior Analysis in IoT*, Journal of Communication **(Q3)**, Vol 14, No. 6, 2019 *click here*

➢ **Amin Shahraki**, Marius Geitle, Øystein Haugen, *A distributed Fog node assessment model by using Fuzzy rules learned by XGBoost,* International Conference on Smart and Sustainable Technologies (SpliTech), Croatia, 2019. *click here*

➢ **Amin Shahraki**, Øystein Haugen, *Social ethics in Internet of Things: An outline and review*, IEEE International Conf. on Industrial Cyber-Physical Systems, Saint-Petersburg, Russia, 2018. *click here*

➢ **Amin Shahraki**, Delaram Khojasteh Kaffash, Øystein Haugen, *A review on the effect of IoT and Smart Cities Technologies on Urbanism*, SEEDA-CECNSM (IEEE), Kastoria, Greece, 2018 *click here*

➢ **Amin Shahraki**, Øystein Haugen, Hamed Taherzadeh, *Last Significant Trend Change Detection Method for Offline Poisson Distribution Datasets*, International Symposium on Networks, Computers and Communications (ISNCC) (IEEE), Marrakesh, Morocco, 2017 *click here*

SUBMITTED PAPERS	➢ **Amin Shahraki,** Mahmoud Abbasi, Amir Taherkordi, Anca Delia Jurcut, *Online Learning for Analysing Network Traffic Streams: Methods, Tools, Challenges and Future Direction,* Computer Networks **(Elsevier, IF:4.474, Q1)** ➢ **Amin Shahraki**, Mahmoud Abbasi, MD Jalil Piran, *6G-Enabled Wireless Networks: Vision, applications, core services, enabling technologies, and future challenges,* Journal of Industrial Information Integration **(Elsevier, IF: 10.063, Q1)** ➢ **Amin Shahraki,** Torsten Ohlenforst, *When Machine Learning Meets Network Management and Orchestration in Edge-based Networking Paradigms,* Computer Networks, **(IEEE, IF: 4.474, Q1)** ➢ **Amin Shahraki,** Mahmoud Abbasi, Claus Pahl, Amir Taherkordi, *A novel Federated Learning-based method for IoT traffic classification,* IEEE/IFIP Network Operations and Management Symposium(IFIP-NOMS), Budapest, 2022
WORK EXPERIENCE	➢ **Assistant Professor,** Department of Computer Sciences, Østfold University College, April 2020-December 2020 ➢ **Research Assistant,** Smart building and Welfare Project, Faculty of Computer Science, Østfold University College, April 2020-December 2020 ➢ **Research Assistant,** Department of Computer Science, University of Oulu, Finland, Jan 2016- April 2016 ➢ **Group Leader**, **Android Developer,** IPPP group established in Khorasan Science and Technology Park and work on the field of Designing Smart Hotel Systems (2012-2014) (Part-time) ➢ **C++ Developer** in the field of Designing Smart Equipment in Ghasre Tarashe Company, Mashhad, Iran, March 2005-June 2007

> **BASCOM developer** in field of Designing Smart Equipment for Training aims, International Informatics institute, Mashhad, Iran, June 2007-July 2009

PROJECTS

> **Artificial Intelligence and advanced Data Analytics for Law Enforcement Agencies (AIDA), Dublin, Ireland, 2021-Now**

  o *Description: Developing Machine Learning testbeds, software, techniques and models for network traffic analysis (network forensics) in IoT based on integrating Machine Learning techniques and Edge computing*

> **Distributed Systems and Artificial Intelligence (DSAI), Fraunhofer IIS, 2020- Now**

  o *Description: working on the design of distributed machine learning techniques and models on/for distributed systems based on Edge computing and related paradigms*

> **Smart Building and Welfare (Technology-Energy-Society), University of Oslo/ Østfold University College, 2016-2020**

  o *Description: Research fellow at the project and working on Self-healing IoT infrastructures to improve QoS of the massive-scale highly Heterogeneous IoT Networks*

  o *Designing and Establishing Private cloud at HioF based on Kubernetes and Docker for using Arrowhead framework in mini-cloud environment.*

> **Productive 4.0, Østfold University College, 2017-2020**

  o *Description: Part-time contribution in Arrowhead framework improvement focusing on providing network infrastructure to connect companies through Arrowhead framework.*

SOFTWARE SKILLS

> **Network Simulators**: OPNET Modeler, OMNeT ++, NS3

  o *Remark: I have used the simulators for more than 10 years in different projects mainly to simulate WSNs, IoT, Mesh and Hierarchical networks. The simulators connect to MATLAB and Python to analyze data gathered from the simulated networks in an online manner*

> **Cloud Frameworks**: Kubernetes, Docker, Google Cloud Platform, Microsoft Azure

  ▪ *Remark: Establishing a private Cloud for Østfold University College based on Kubernetes and Docker and maintaining the private cloud for about three years used by employees, students and researchers for different container-based tasks*

- ➢ **Programming Languages**: C++, MATLAB, JAVA, C#, BASCOM-AVR

  - ○ *Remark: As a developer, I have used C++ for network simulation by OPNET modeler and OMNET++ for about 10 years. In addition, from 2008 to 2017, I was using MATLAB to process networking data. BASCOM-AVR were also used for Microcontroller programming*

- ➢ **ML Programming:** Python

  - ▪ Math Libraries: Numpy (Proficient), Pandas (Good)

  - ▪ ML Libraries: PyTorch (Proficient), Faust (Proficient), Keras (Good), Tensorflow (Good), Open AI Gym (Good)

  - ▪ Online Machine Learning: MOA (Massive Online Analysis) is a Java-based platform designed by MIT for online learning

    - ○ *Remark: As a Python developer, I have been using various ML Python libraries for different Machine Learning development in the field of Machine Learning for networking. Various technical papers published in the field of ML are implemented by Python*

- ➢ **Mobile Programming**: Android Developer, Xcode

- ➢ **VSC**: Git (Github, Gitlab)

- ➢ **Other Software:** Windows Server, Linux, 3DS Max, Latex

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SERVICES

- ➢ **Scientific reviewer** of 26 top-ranked journals (See my *Publons* profile for an updated list). Selected journals:
  - ○ **IEEE**
    - ○ *IEEE Network Magazine*
    - ○ *IEEE Transactions on Green Communications and Networking*
    - ○ *IEEE Transactions on Sustainable Computing*
    - ○ *IEEEE ACCESS*
  - ○ **Elsevier**
    - ○ *Elsevier Engineering Applications of Artificial Intelligence*
    - ○ *Elsevier Simulation Modelling Practice and Theory*
    - ○ *Elsevier Machine Learning with Applications*
  - ○ **Springer**
    - ○ *Springer International Journal of Wireless Information Networks*
    - ○ *Springer Peer-to-Peer Networking and Applications*
    - ○ *Springer Wireless Networks*
  - ○ **Wiley**
    - ○ *Wiley Transactions on Emerging Telecommunications Technologies*
    - ○ *Wiley International Journal of Communication Systems*
    - ○ *Wiley Concurrency and Computation: Practice and Experience*

- o **Other**
  - o *Sensors*
  - o *Plos one*
- ➢ External reviewer **of research project proposal entitled " Interoperability of Biomedical Connected Objects", International Centre for Mathematics and Computer Science, Toulouse, France, Sept. 2021**

TEACHING EXPERIENCE

- ➢ Supervisor of Master Thesis entitled "**Network Traffic Prediction in IoT-Edge networks**", Østfold University College, Halden, Norway,Dec. 2020-Now (Published one paper in Transactions on Emerging Telecommunications Technologies (Wiley, IF: 2.683)

- ➢ Supervisor of Master Thesis entitled "**Designing Cognitive IoT-Edge gateways**", Østfold University College, Halden, Norway, May 2020-Dec. 2020

- ➢ Lecturer and Guest Lecturer in **Data communication**, **Software Engineering** and **Cyber Physical Systems** Courses (Bachelor and Master Degree Courses)**,** Østfold University College, Halden, Norway, April 2016-Dec 2020.

- ➢ **Supervisor** of bachelor Project funded by Smart Innovation Norway Company entitled "An emulator for Adversary Emulation: Focus on Cyber Attacks", October 2019- May 2020 (4 bachelor students).

- ➢ Lecturer in **System Programming** and **System programming laboratory** Courses, Toos Institute of Higher Education, Mashhad, Iran, Spring 2013-Autumn 2015.

- ➢ **Supervisor** of five **Bachelor projects**, Toos institute of Higher Education, Mashhad, Iran, Autumn 2014-2015 (Software Engineering, Computer Networks and Cyber Security fields)

- ➢ Lecturer in **Discrete mathematics**, Toos institute of Higher Education, Mashhad, Iran, spring 2014.

- ➢ Instructor in **Computer Networks Simulation with OPNET Modeler**, International Informatics Institute, Mashhad, Iran, Spring 2013.

- ➢ Lecturer in **Computer Networks Laboratory**, University of Applied Science and Technology, ACECR branch, Mashhad, Iran, Autumn 2011.

- ➢ Lecturer in **Operating Systems for Computer Networks Management Laboratory**, University of Applied Science and Technology, ACECR branch, Mashhad, Iran, Autumn 2011.

	➢ Lecturer in **Assembly and Machine Language Programming Laboratory**, University of Applied Science and Technology, ACECR branch, Mashhad, Iran, Autumn 2010-Autumn 2012.

HONORS & AWARDS	➢ Received **Alain Bensoussan** Fellowship for pursuing Postdoctoral programme, ERCIM, the European Research Consortium for Informatics and Mathematics (ERCIM), France, 2020
	➢ Received **Overseas Research Grant** for research stays abroad, Faculty of Computer Sciences, Østfold University College, Norway, 2019
	➢ Received internal **Ph.D. Research Grant** for pursing PhD programme, Faculty of Computer Sciences, Østfold University College, Norway, 2016
	➢ Winner of **DIT Fiosraigh Scholarship** for pursuing Ph.D. programme, School of Computing, Dublin Institute of Technology, Ireland, 2015
	➢ Winner of **PhD Scholarship** for pursuing Ph.D. programme, Department of Computer Sciences, University of Ljubljana, Slovenia, 2015
	➢ Winner of **International Macquarie University Research Excellence Scholarship (iMQRES)** to cover tuition fee+ living allowance for pursuing PhD programme, Faculty of Science and Engineering, Macquarie University, Australia, 2015
	➢ Winner of **international Research Training Pathway (iRTP)** to cover tuition fee+ living allowance for pursuing Master of Research **(MRes)**, Faculty of Science and Engineering, Macquarie University, Australia, 2015
	➢ Winner of **International Research Scholarship (IRS) + UTS President's Scholarship (UTSP)** to cover tuition fee+ living allowance for pursuing PhD programme, Faculty of Engineering and Information Technology, University of Technology Sydney, Australia, 2015.
	➢ Offered **Ph.D. Research Grant** for pursuing PhD programme, Center for Ubiquitous Computing, University of Oulu, Finland, 2015

MEMBERSHIP	➢ Member of Institute of Electrical and Electronics Engineers **(IEEE)** 2012-Now
	➢ Member of **National Elite Foundation** of Iran, 2012- Now