Dr. Junaid Qadir *(Ph.D.)*

Born on 09-03-1993.
Flexible in mobility

Contact:
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Research Interest

LoRaWAN, Internet of Things (IoTs), Cybersecurity, Cryptography, 5G communication, eHealth, Machine Learning and Deep Learning

Current Position
11-2024 - Present

Postdoctoral Researcher at DSP Lab, DITEN, University of Genova, Italy
PI: Prof Andrea Sciarrone, Prof. Fabio Lavagetto

Research Experience

11-2024 - Present

2nd Postdoc: Digitial Signal Processing (DSP) Lab, Department of Electrical, Electronic and Telecommunications Engineering, and Naval Architecture (DITEN), University of Genova, Italy
Postdoc research fellow
- Working on Multimedia signal processing through Machine/Deep Learning (M/DL) techniques on wearable sensors within the Internet of Things (IoT) paradigm
- This research is a part of the RAISE (Robotics and AI for Social Economic Empowerment) project: https://www.raiseliguria.it/en/
- Evaluating patients' balance via smart glasses

11-2023 -10-2024

1st Postdoc: Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT),
The Smart and Secure Networks Lab (S2N), Department of Electrical, Electronic and Telecommunications Engineering, and Naval Architecture (DITEN), University of Genova, Italy
Postdoc research fellow
- Working on the EU project H2020 5G-GPP 5GINDUCE Innovation Action and HORIZON 6GREEN Research and Innovation Action: https://www.5g-induce.eu/ , https://www.cnit.it/
- App development on NFVCL/OSM and OpenStack

PI: Prof. Roberto Bruschi, Prof. Rafaele Bolla, Prof. Franko Davoli

01.2022 – 30.2022

KTH Royal Institute of Technology, Stockholm, Sweden
Division of Network and Systems Engineering
School of Electrical Engineering and Computer Science
Visiting Ph.D. Student (January 1 – June 30, 2022)
- Working in LoRaWAN cybersecurity

PI: Dr. Ismail Butun, Prof. Robert Lagerstrom

11.2020 – 2024

University of Genova, Genova/ Italy
Department of Electrical, Electronic and Telecommunications Engineering, and Naval Architecture (DITEN)
Ph.D. Research Assistant
- Established LoRaWAN network using the Adafruit feather m0 LoRa node

With the Dragino LPS8 Gateway
- Protecting LoRaWAN packets from different attacks

PI: Prof. Paolo Gastaldo, Prof. Daniele D. Caviglia

11.2019 – 09.2020

The University of Valladolid, Valladolid/ Spain
Department of Signal Theory, and Communications, and Telematics Engineering
- Online research collaboration with Spainish professors
- Designed protocols for mission-critical applications in UWSNs
- Analyzed the state-of-the-art of mobile edge computing
- Worked on sentiment analysis using machine-learning techniques

11.2016 – 06.2019

Quaid-i-Azam University, Islamabad/ Pakistan
Research Assistant at the Department of Electronics
- Examined of various routing-protocols in UWSNs
- Designed cooperative routing techniques for UWSNs
- Proposed robust algorithms for packets reliability
- Proposed energy-efficient routing scheme for UWSNs

PI: Prof. Anwar Khan, Prof. Hasan Mahmood

Academic Development

11.2020 – 03.2024

University of Genova, Genova/ Italy
Department of Electrical, Electronic and Telecommunications Engineering, and Naval Architecture (DITEN)
Ph.D. in progress
Supervisor: Dr. Daniele D. Caviglia and Dr. Paolo Gastaldo

11.2016 – 06.2019

Quaid-i-Azam University, Islamabad/ Pakistan
Master of Philosophy in Electronics (MPhil)
Underwater wireless sensor networks (UWSNs), mobile edge computing

Dissertation title: Channel-aware reliable routing for underwater wireless sensor networks (UWSNs)

Short Description: I investigated the robustness of routing protocols. Specifically, I worked on how to efficiently, especially in a resource constrained environment, route the sensed data from the bottom of the water to the top. Also proposed routing protocol for the mission-critical applications.
Supervisor: Dr. Hasan Mahmood

09.2013 – 09.2016

University of Peshawar, Peshawar/ Pakistan
Master of Science in Electronics
Wireless sensor networks (WSNs), power control schemes

Research title: A survey of the power control scheme for wireless sensor networks (WSNs)

Short Description: Presented an overview of the power control schemes. In particular, I highlighted the concerns for researchers and scientists they could focus on while choosing algorithms for deploying WSNs in different scenarios

Supervisor: Dr. Anwar Khan

Publications (Journals)

2024 Es-sabery, F., Es-sabery, I., **Qadir, J.** et al. A hybrid Hadoop-based sentiment analysis classifier for tweets associated with COVID-19 utilizing two machine learning algorithms: CNN, and fuzzy C4.5. J Big Data 11, 176 (2024). https://doi.org/10.1186/s40537-024-01014-4

2023 **Qadir, Junaid**, Ismail Butun, Paolo Gastaldo, Orazio Aiello, and Daniele D. Caviglia. "Mitigating Cyber Attacks in LoRaWAN via Lightweight Secure Key Management Scheme." *IEEE Access* (2023). (IF = 3.476: Q1).

2022 Mohamed, A.; Wang, F.; Butun, I.; **Qadir, J**.; Lagerström, R.; Gastaldo, P.; Caviglia, D.D. Enhancing Cyber Security of LoRaWAN Gateways under Adversarial Attacks. *Sensors* 2022, *22*, 3498. https://doi.org/10.3390/s22093498 (IF = 3.847: Q2).

2022 Fatima Es-sabery, Khadija Es-sabery, Hamid Garmani, **Junaid Qadir**, and Abdellatif Hair, "Evaluation of different extractors of features at the level of sentiment analysis", Infocommunications Journal, Vol. XIV, No 2, June 2022, pp. 85-96., https://doi.org/10.36244/ICJ.2022.2.9

2021 F. Es-Sabery, K. Es-Sabery, **J.Qadir** *et al.*, "A MapReduce Opinion Mining for COVID-19-Related Tweets Classification Using Enhanced ID3 Decision Tree Classifier," in IEEE Access, vol. 9, pp. 58706-58739, 2021, doi: 10.1109/ACCESS.2021.3073215.
(IF = 3.745: Q1).

2021 F. Es-Sabery, A. Hair, **J. Qadir**, B. Sainz-De-Abajo, B. García-Zapirain and I. D. L. Torre-Díez, "Sentence-Level Classification Using Parallel Fuzzy Deep Learning Classifier," in IEEE Access, vol. 9, pp. 17943-17985, 2021, doi: 10.1109/ACCESS.2021.3053917.
(IF = 3.745: Q1).

2020 **J. Qadir**, B. Sainz-De-Abajo, A. Khan, B. García-Zapirain, I. De La Torre-Díez and H. Mahmood, "Towards Mobile Edge Computing: Taxonomy, Challenges, Applications and Future Realms," in IEEE Access, vol. 8, pp. 189129-189162, 2020, doi: 10.1109/ACCESS.2020.3026938.
(IF = 3.745: Q1).

2020 **J. Qadir**, U. Ullah, B. Sainz-De-Abajo, B. G. Zapirain, G. Marques and I. de la Torre Diez, "Energy-Aware and Reliability-Based Localization-Free Cooperative Acoustic Wireless Sensor Networks," in IEEE Access, vol. 8, pp. 121366-121384, 2020, doi: 10.1109/ACCESS.2020.3006194.
(IF = 3.745: Q1).

2020 U. Ullah, A. R. Shahid, M. Irfan, **J. Qadir**, M. Nawaz and R. Qureshi, "A Stable and Reliable Short-Path Routing Scheme for Efficient Acoustic Wireless Sensor Networks (AWSNs)," in IEEE Access, vol. 8, pp. 1458-1474, 2020, doi: 10.1109/ACCESS.2019.2962004.
(IF = 4.098: Q1).

2020 Khan, Anwar, Atiq Ur Rahman, Mahdi Zareei, Najm Us Sama, Cesar Vargas-Rosales, **Junaid Qadir**, and Ehab Mahmoud Mohamed. "Modem design for underwater acoustic networks: Taxonomy, capabilities, challenges,

applications and future trends." Journal of Intelligent & Fuzzy Systems Preprint (2020): 1-11.

2019 **Qadir, J.**; Khan, A.; Zareei, M.; Vargas-Rosales, C. Energy Balanced Localization-Free Cooperative Noise-Aware Routing Protocols for Underwater Wireless Sensor Networks. *Energies* 2019, *12*, 4263. https://doi.org/10.3390/en12224263
(IF = 3.004: Q2).

2022 **J. Qadir**, B. Sainz-De-Abajo, A. Khan, B. García-Zapirain, I. De La Torre-Díez and H. Mahmood, "Towards Mobile Edge Computing: Taxonomy, Challenges, Applications and Future Realms," in IEEE Access, vol. 8, pp. 189129-189162, 2020, doi: 10.1109/ACCESS.2020.3026938.

Conference Proc.

2023 **Qadir, J.,** Cabus, J.E.U., Butun, I., Lagerström, R., Gastaldo, P., Caviglia, D.D. (2023). Analysis of LPWAN: Cyber-Security Vulnerabilities and Privacy Issues in LoRaWAN, Sigfox, and NB-IoT. In: Butun, I., Akyildiz, I.F. (eds) Low-Power Wide-Area Networks: Opportunities, Challenges, Risks and Threats. Springer, Cham. https://doi.org/10.1007/978-3-031-32935-7_5

2023 **J. Qadir**, J. Urrea, I. Butun, R. Lagerstrom, P. Gastaldo, D. Caviglia, "Analysis of LPWAN: Cyber-Security Vulnerabilities and Privacy Issues in LoRaWAN, SigFox, and NB-IoT" Springer Nature, 2023

2022 **Junaid Qadir**, Ismail Butun, Paolo Gastaldo, and Daniele D. Caviglia "Review of Security Vulnerabilities in LoRaWAN" In International Conference on Applications in Electronics Pervading Industry, Environment and Society, 2022.

2022 **Qadir, Junaid**, Ismail Butun, Robert Lagerstrom, Paolo Gastaldo, and Daniele D. Caviglia. "Towards Smart Sensing Systems: A New Approach to Environmental Monitoring Systems by Using LoRaWAN." In 2022 IEEE Zooming Innovation in Consumer Technologies Conference (ZINC), pp. 176-181. IEEE, 2022.

2019 U. Ullah, **J. Qadir**, A. Mobin and A. Hussain, "CSAR: Cooperative Stability Aware Routing Scheme for Acoustic Wireless Sensor Networks," 2019 22nd International Multitopic Conference (INMIC), 2019, pp. 1-8, doi: 10.1109/INMIC48123.2019.9022784.

2019 **Qadar J.,** Khan A., Mahmood H. (2019) DNAR: Depth and Noise Aware Routing for Underwater Wireless Sensor Networks. In: Barolli L., Javaid N., Ikeda M., Takizawa M. (eds) Complex, Intelligent, and Software Intensive Systems. CISIS 2018. Advances in Intelligent Systems and Computing, vol 772. Springer, Cham. https://doi.org/10.1007/978-3-319-93659-8_21

Recognized Journal Reviewer

07.2020 IEEE Sensors Journal
01.2020 International Journal of Distributed Sensor Networks (IJDSN)
09.2019 Network Modeling Analysis in Health Informatics and Bioinformatics
07.2019 Computer Methods and Programs in Biomedicine Elsevier
06.2019 Heliyon

04.2019	IEEE Access
01.2019	Journal of King Saud University – Computer and Information Sciences
10.2019	Acta Acustica united with Acustica: the journal of the European Acoustics Association (EAA)

Awards/Scholarships

- Best paper award at IEEE ZINC conference, University of Novi Sad, Serbia
- Awarded Italian Government Scholarship for Ph.D. studies in Italy (2020-2023)
- Awarded the Laptop from the Government of Pakistan through the Prime Minister's best student award scheme (2019)
- Awarded paid Internship from Government of Pakistan Prime Minister Youth Internship Program - PMYTS (2017-2018)

Special Knowledge

Computer skills	Linux, Arduino, Raspberry Pi, GNU-Radio, MS-Office
Technical Software	MATLAB–, Latex, RTL-SDR, Git, Docker, VMWare, STMicroelectronics, LoRa, LoRaWAN, MQTT, MS Visio
Programming languages	C/C++ - Good, Python – Good, Statistic software Orange – Basic (Machin learning), (Simulators: NS2, OMNET++, MiniNet)
Languages	English – business fluent, sound knowledge of scientific terminology

Memberships

IEEE member: Institute of Electrical and Electronics Engineers
Membership Number: 97730540 (https://www.ieee.org/)

ACM member: Association for Computing Machinery
Membership Number: 7721139 https://www.acm.org/)

References

Daniele D. Caviglia
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University of Genova, Italy
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Relation: Ph.D. thesis supervisor

Paolo Gastaldo
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Relation: Ph.D. thesis co-supervisor

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Relation: Advisor

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