# Syed Muhammad Danish

Email: syed-muhammad.danish.1@ens.etsmtl.ca
Phone: 438-408-2358 | Personal Website

## Education

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|---|---|
| 2019 - 2022 | PhD Scholar, **ETS Montreal**, Quebec, Canada<br>Thesis: Service Selection Middleware using Blockchain for IoT Applications<br>Supervisor: Prof. Kaiwen Zhang<br>Co-supervisor: Prof. Hans-Arno Jacobsen |
| 2016 - 2018 | Master of Science in Electrical Engineering<br>**National University of Sciences and Technology, Islamabad, Pakistan**<br>Thesis: "Blockchain-based authentication in LoRaWAN based IoT Networks" |
| 2010 - 2014 | Bachelor of Science in Telecom Engineering,<br>**University of Engineering and Technology, Taxila, Pakistan** |

## Work Experience

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| Current<br>July 2023 | **Post-Doctoral Researcher at York University**<br>- Performance modelling and evaluation of blockchain-based solutions.<br>- Analysis and comparison of different blockchain simulators.<br>- Privacy-preserving protocols for energy markets.<br>- Blockchain in infrastructure-less environment. |
| Current<br>Sep 2022 | **Post-Doctoral Researcher at ETS Montreal and Hydro-Quebec**<br>- Research and investigate blockchain-based solutions for transactive energy, distributed energy resources (DERs) integration, and peer-to-peer energy markets. |
| Aug 2022<br>Oct 2021 | **Research Intern at Hydro-Quebec**<br>Blockchain-based projects for future smart grid use-cases. |
| Aug 2018<br>Feb 2018 | **Research Assistant at Frederick University Cyprus (Erasmus + Project)**<br>- Blockchain-based LoRaWAN IoT authentication protocol. |

## Teaching Experience

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| Current<br>Sep 2023 | **Course Director at York University**<br>*ITEC2610- Object Oriented Programming in Java (Fall 2023)*<br>*ITEC1610 - Introduction to Computer Programming - Python (Winter 2024)* |
| Dec 2021<br>Sep 2020 | **Teaching Assistant at ETS Montreal**<br>*Course: Planning of a research project in engineering (MTR801)* |

## Selected Journal Publications

1. **S. M. Danish**, K. Zhang and H. A. Jacobsen, "BlockAIM: A Neural Network-Based Intelligent Middleware For Large-Scale IoT Data Placement Decisions," in *IEEE Transactions on Mobile Computing*, vol. 22, no. 1, pp. 84-99, 1 Jan. 2023, doi: 10.1109/TMC.2021.3071576. **(Q1 Journal, Impact Factor = 7.9)**

2. **S. M. Danish**, K. Zhang, H. -A. Jacobsen, N. Ashraf and H. K. Qureshi, "BlockEV: Efficient and Secure Charging Station Selection for Electric Vehicles," in *IEEE Transactions on Intelligent Transportation Systems*, vol. 22, no. 7, pp. 4194-4211, July 2021, doi:10.1109/TITS.2020.3044890. **(Q1 Journal, Impact Factor = 8.5)**

3. **S. M. Danish**, K. Zhang, F. Amara, J. C. O. Cepeda, L. F. R. Vasquez, T. Marynowski. Blockchain for Energy Credits and Certificates: A Comprehensive Review, *IEEE Transactions on Sustainable Computing* (Minor Revision, Manuscript ID: TSUSC-2023-04-0075.R2) **(Q1 Journal, Impact**

**Factor = 3.9)**

4. M. M. Shabir, **S. M. Danish**, and K. Zhang. BlockQoS: Fair Monetization of On-demand Quality-of-Service using Blockchains. *ACM Distributed Ledger Technologies* 2, 2, Article 11 (June 2023), 25 pages. https://doi.org/10.1145/3580284

5. **S. M. Danish**, M. M. Shabir, K. Zhang, H. A. Jacobsen, S. A. Hassan. A Blockchain-Based Privacy-Preserving Charging Station Reservation and Payment Scheme for Electric Vehicles, *ACM Distributed Ledger Technologies* (Major Revision, Manuscript ID: DLT-2023-0009.R1)

## Selected Conference Publications

1. **S. M. Danish**, K. Zhang and H. A. Jacobsen, "BlockAM: An Adaptive Middleware for Intelligent Data Storage Selection for Internet of Things," 2020 *IEEE International Conference on Decentralized Applications and Infrastructures (DAPPS)*, Oxford, UK, 2020, pp. 61-71, doi: 10.1109/DAPPS49028.2020.00007. (Best Paper Award)

2. **S. M. Danish**, A. Nasir, H. K. Qureshi, A. B. Ashfaq, S. Mumtaz and J. Rodriguez, Network Intrusion Detection System for Jamming Attack in LoRaWAN Join Procedure," *IEEE International Conference on Communications (ICC)*, Kansas City, MO, USA, 2018, pp. 1-6, doi: 10.1109/ICC.2018.8422721.

3. M. M. Shabir, **S. M. Danish**, and K. Zhang, BlockDEV: Blockchain-Based Decentralized Charging Service Provider Selection for Electric Vehicles," *IEEE International Conference on Distributed Computing Systems (ICDCS)* (Submitted).

## Skills

Blockchain Platforms (Ethereum, Energy Web Chain, Quorum, Hyperledger, Avalanche, Iotex, Polygon Matic, Chainlink Oracles)
Blockchain Development Frameworks (Truffle (web3js), Hardhat (Etherjs), Brownie (web3py))
Programming Languages (Python, JavaScript, Solidity, TypeScript)
Other tools (Docker, Gitlab (CI/CD), Linux Ubuntu, bash scripting)
Hardware (Arduino, Raspberry Pi)
Applied Machine Learning/Deep Learning (Keras, TensorFlow)
Zero Knowledge Proofs libraries (Zokrates, Circom, Noir)

## Public Research Profile

1. Google Scholar
2. DBLP
3. Research Gate

## Languages

1. English (Bilingual Proficiency)
2. French (Limited Working Proficiency)

## Achievements and Certificates

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| Aug. 2022 | Nominated for best PhD thesis award |
| Jan. 2019 | International Research Collaboration Scholarship (TU Munich, Germany) |
| Jan. 2019 | Scholarship for Securing Top Position in MSEE 2016 (Gold Medalist) |
| Feb. 2018 | Erasmus + Exchange Scholarship |
| Nov. 2021 | $10,000 research award, IEEE Blockchain Transactive Energy (BCTE) |

## References

1. Prof. Kaiwen Zhang
Associate Professor | École de technologie supérieure, Montreal | kaiwen.zhang@etsmtl.ca

2. Prof. Hans-Arno Jacobsen

Professor | University of Toronto, Canada | jacobsen@eecg.toronto.edu

3. Prof. Sotirios Liaskos
Associate Professor | York University, Toronto | liaskos@yorku.ca

4. Prof. Marios Lestas
Associate Professor | Frederick University, Cyprus | eng.lm@frederick.ac.cy