Taïk Afaf

Education

2018-2022 **PhD in Electrical Engineering**, *Université de Sherbrooke, Engineering Faculty, Electrical engineering and Computer Engineering Department*,
Thesis title: Communication-efficient mobile edge intelligence
Courses: Managing Research and Innovation, Computational neuroscience and applications in information processing. *GPA : 4.15/4.3.*

2017-2018 **Specialized Graduate Studies**, *Université de Sherbrooke, Engineering Faculty, Electrical engineering and Computer Engineering Department*.
Courses: Vehicular networks, Formalizable artificial intelligence, Probabilistic artificial intelligence, Bio-inspired artificial intelligence. *GPA : 4.07/4.3*

2015-2017 **B.Sc in Software Engineering**, *ENSIAS - Rabat, Morocco* , finished first year with honors, selected in second year for mobility to Canada (covering all studies fees).

2013-2015 **Preparatory Classes for Engineering School**, Lycée Ibn Abdoune- Khouribga, Morocco , *Mathematics, Physics and Engineering science.*

Scholarships and Awards

Fall 2021 **Leonard De Vinci Medal**, *Université de Sherbrooke*, the highest distinction that the Engineering Faculty awards to students, (1000$).

Fall 2021 **Best Paper Award at IEEE LCN 2021**.

Summer 2019 **Mitacs Acceleration**, *(24000$/year)*.

Winter 2019-Present **Foreign students fee exemption grant, awarded at home country by merit**, *(~18,000$).*

2017–2018 **Exchange students scholarship, Université de Sherbrooke**, *(6000$)*.

Publications

Journal Papers

Published/Accepted

[1] ***A. Taïk***, *Z.Mlika, and S. Cherkaoui "Clustered Vehicular Federated Learning: Process and Optimization", [Early Access], pp 1-13, in IEEE Transactions on Intelligent Transportation Systems* **(IF:6.49, Q1)**.

[2] ***A. Taïk***, *B.Nour and S. Cherkaoui,"Empowering Prosumer Communities in Smart Grid with Wireless Communications and Federated Edge Learning" in IEEE Wireless Communications, vol. 28, no.6, pp. 26-33, December 2021, doi: 10.1109/MWC.017.21001* **(IF:11.97,Q1)**.

[3] ***A. Taïk***, *Z.Mlika and S. Cherkaoui, "Data-Aware Device Scheduling for Federated Edge Learning"* , IEEE Transactions on Cognitive Communications and Networking, doi: 10.1109/TCCN.2021.3100574 **(IF:4.34, Q1)**.

[4] ***A. Taïk*** *and S. Cherkaoui, "Federated Edge Learning: Design Issues and Challenges"* , in IEEE Network, vol. 35, no. 2, pp. 252-258, March/April 2021, doi: 10.1109/MNET.011.2000478 **(IF:10.69,Q1)**.

Under review   **[1]** ***A. Taïk***, *A.Abouaomar, and S. Cherkaoui "Green Federated Learning : Models and Protocols ", Under review CRC Press.*

[2] *A.Abouaomar, A.Filali,* ***A. Taïk*** *and S. Cherkaoui "Machine Learning Applications in CR-IoV", Under review CRC Press.*

[3] *A.Abouaomar*,* ***A. Taïk****, *A.Filali*, and S. Cherkaoui "Federated Learning for RAN Slicing in Beyond 5G Networks", Under review, submitted to IEEE Computational Intelligence Magazine (*Equal Contribution).*

Peer reviewed Conferences   **[1]** ***A. Taïk***, *H.Moudoud, and S. Cherkaoui "Data-quality based device Scheduling for Federated Edge Learning"* , IEEE LCN 2021, **Best Paper Award**.

[2] ***A. Taïk*** *and S. Cherkaoui,"Electrical Load Forecasting Using Edge Computing and Federated Learning"* , in 2020 IEEE International Conference on Communications (ICC), Jun. 2020, pp. 1–6, doi: 10.1109/ICC40277.2020.9148937.

Research and Development Projects

Fall 2020 - Now
Analysis of Mesh Network data in relation to external condition *Trilliant Inc.*, - Exploratory data analysis - Data cleaning and preparation -Analysis of the effect of weather conditions and human activity - Evaluation of different performance metrics in deployed Mesh network .

Summer 2020
Research Mentor,
-Designed research projects for interns. The projects were mainly about on-device computation of recurrent neural networks, fast inference at the edge of the network, and gossip learning.
-Made research schedule and provided guidance throughout the project.
-Conducted training and taught basics about artificial neural networks and edge inference techniques.
Tools : PyTorch, Numpy

Summer 2019
Design and implementation of an open DaaS data management architecture to facilitate the development of new services using LoRa *Sherbrooke City*, Comparative study of storage tools and analysis platforms and realization of an end-to-end prototype.

Winter 2018
Implementation of a management tool and data analysis in the case of smart parking using LoRa technology
-Designed the database and insured its accessibility for the mobile application
-Designed an interactive dashboard for analysis and visualization, Université de Sherbrooke.
Used tools : Python, Cassandra, LoRa, PyQT5

Knowledge Area

Programming Languages   Python, C

Databases   Cassandra, SQL

ML/DS Libraries	Pandas, SkLearn, PyTorch, Tensorflow
Languages	French (Proficient), English (Proficient)

Additional activities

2020 - Now	**Journal and conferences review:** *IEEE Internet of Things Journal, IEEE Systems Journal, IEEE Network, IEEE Transactions on Vehicular Technology, Springer Nature, Computer Networks (Elsevier), Vehicular Communications (Elsevier), IEEE International Conference on Communications (ICC) 2021.*
2022- 2024	**ACM N2Women board member**, Membership board.
2018- 2021	**Member at Choeur Campus**, Université de Sherbrooke's Choir, Alto I.
2019-2020	**UdeS Sponsoring Program**, Accompany and support new international students.
2017- 2018	**Member at Zero Waste Committee**, Université de Sherbrooke, -Coordination assistant (Winter 2018) - Information delegate (Fall 2017).
2015- 2017	**Member at CINDH ENSIAS**, ENSIAS's Charity club, Information Delegate (2017).