

# Mehran Ahadi

PhD in Electrical Engineering · MedTech Researcher

Interested in RF Electronics, Antennas, Signal Processing, System-level Software, and Embedded Systems.

[mehran.ahadi.1@ulaval.ca](mailto:mehran.ahadi.1@ulaval.ca) · [mehran@ahadi.me](mailto:mehran@ahadi.me)

[mehran.ahadi.me](https://mehran.ahadi.me) · [linkedin.com/in/zxcmeهران/](https://linkedin.com/in/zxcmeهران/) · [github.com/zxcmeهران/](https://github.com/zxcmeهران/)

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## Education

- **Université Laval** QUEBEC, QC  
*Ph.D. in Electrical Engineering* *Fall 2019 - Fall 2024*
    - **Thesis Title:** Wearable Respiratory and Cardiac Activity Monitoring System Using Antenna Sensors
    - **References:** [Younès Messaddeq, PhD](#) — [Amine Miled, PhD](#) — [Marc-André Dugas, MD, M.Sc., FRCPC](#)
  - **Amirkabir University of Technology — Tehran Polytechnic** TEHRAN  
*M.Sc. in Photonics Engineering* *Fall 2016 - Winter 2019*
    - **Thesis Title:** Design & Simulation of a Metasurface using Graphene
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## Skills

- **Languages:**
    - **English:** CEFR Level **C1**
    - **French:** CEFR Level **B2**
    - **Persian:** Native
  - **RF & Microwave:**
    - **Experiences:** RF System Design, High-Frequency PCBs, Filter Design, Antenna Design, Metamaterials, Frequency Selective Surfaces (FSS), Transmission Lines
    - **Software:** CST Studio Suite, Ansys HFSS, COMSOL EM Simulations, Keysight ADS and RFPro
    - **Hardware:** Vector Network Analyzers, Spectrum Analyzers, RF Signal Generators, High-Frequency Oscilloscopes, Microwave Waveguides & Passive Components
  - **System Design:**
    - **Technologies:**
      - \* **Signal Processing:** Real-time Digital Signal Processing, Digital & Analog Filter Design, Cryptography (RSA, AES, Hashing)
      - \* **Embedded:** Zephyr RTOS, FPGA, ARM Cortex-M, NRF5x MCU Family, Raspberry Pi
      - \* **Protocols:** Bluetooth LE (GATT Protocol), VoIP Protocol (Gateways, SIP, Clients), IP Network
      - \* **Neural Networks:** TensorFlow, PyTorch
      - \* **Computer Vision:** OpenCV
    - **Programming Languages:** C, C++, Python, Java, Kotlin, MATLAB, VHDL, Javascript, PHP
    - **Operating Systems:** GNU/Linux (\*nix), Microsoft Windows
    - **Software & DKs:** MATLAB and Simulink, Altium Designer, Keysight ADS, Xilinx Vivado, Xilinx Vitis, Xilinx ISE & EDK, nRF Connect SDK, Android SDK, Solidworks
  - **Others:**
    - **Software Dev:** Qt Framework, Android SDK, Node.js, Apache Webserver, Relational DBs (MySQL and PostgreSQL), NoSQL DBs (Redis), RESTful and Websocket APIs
    - **Tools:** Bash, Git, Mercurial, Virtualization
    - **Type Setting:** L<sup>A</sup>T<sub>E</sub>X, Markdown (MD), Microsoft Office, HTML+CSS
    - **Graphics:** Adobe Photoshop, DaVinci Resolve
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## Honors and Awards

- INVENTECH 2024-2025: Programme de subvention destiné à soutenir les étudiant(e)s-inventeur(ice)s de technologies prometteuses — FRQ Nature et technologies and Axelys  
"Système portable et non invasif pour la surveillance continue de la respiration en temps réel"  
Year 2025 — Role: The Student Inventor — Supervisor: Y. Messaddeq — Amount: [REDACTED]
- Business Strategy Internship (BSI) Award — Mitacs and V1 Studio  
"L2M QC 2024 – Surveillance respiratoire et cardiaque en temps réel avec technologie portable non invasive"  
Year 2024 — Role: The Intern — Supervisor: Y. Messaddeq — Amount: [REDACTED]
- Programme de soutien aux organismes de recherche et d'innovation (PSO) Volet 2: Soutien aux projets — Ministère de l'Économie et de l'Innovation (MEI), Gouvernement du Québec and SOVAR S.E.C  
"Développement d'un textile intelligent pour la détection en temps réel de la respiration"  
Year 2021 — Role: Collaborating Researcher — Supervisor: Y. Messaddeq — Amount: [REDACTED]

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## Publications

1. **M. Ahadi**, A. Miled, M.-A. Dugas and Y. Messaddeq, "Vital Signs Monitoring in Various Conditions Using the Single Antenna Bio-Sensing Method," *2025 23rd IEEE Interregional NEWCAS Conference (NEWCAS)*, Paris, France, 2025 (accepted, to be presented June 2025)
2. **M. Ahadi**, A. Miled, M.-A. Dugas and Y. Messaddeq, "Single Antenna Bio-Sensing for Non-invasive Respiratory and Cardiac Activity Monitoring," in *IEEE Sensors Journal*, vol. 24, no. 24, pp. 40764-40773, Dec. 15, 2024, doi: 10.1109/JSEN.2024.3484459.
3. **M. Ahadi**, A. Miled, M.-A. Dugas, and Y. Messaddeq, "Validation Of A Novel Respiratory Monitoring Method and System Based on Antenna Sensors and Optical Tracking of Chest Motion," *2024 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Orlando, FL, USA, 2024, pp. 1-4, doi: 10.1109/EMBC53108.2024.10781715.
4. **M. Ahadi**, M. Roudjane, M.-A. Dugas, A. Miled, and Y. Messaddeq, "Wearable Sensor Based on Flexible Sinusoidal Antenna for Strain Sensing Applications," *Sensors*, vol. 22, no. 11, p. 4069, May 2022, doi: 10.3390/s22114069.
5. H. Abed, S. Bellemare-Rousseau, B. Bélanger-Huot, **M. Ahadi**, É. Drouin, M. Roudjane, M. Dugas, A. Miled, Y. Messaddeq, "A Wire-free and Fiber-Based Smart T-Shirt for Real-Time Breathing Rate Monitoring," in *IEEE Sensors Journal*, 2021. doi: 10.1109/JSEN.2021.3139032.

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## Experiences

- **Ph.D. Candidate: COPL / LABioTRON**  
*Université Laval — Quebec, QC* *Fall 2019 - Fall 2024*
  - Focused on Novel Technologies of Human Vital Signal Monitoring and Processing, comprised of:  
(1) Antenna Design, (2) RF Circuits & Systems Design, (3) Real-time Signal Processing, and  
(4) Embedded Systems Design.
- **Lab2Market Validate – 2024 Quebec Cohort**  
*V1 Studio — Montreal, QC* *Fall 2024*
  - A market research and validation program with a highly competitive selection process, supporting the commercialization of the technology I developed during my PhD studies.
- **Research Assistant: Centre hospitalier de l'Université Laval (CHUL)**  
*CHU de Québec — Université Laval — Quebec, QC* *2022 - 2023*
  - Signal Processing and Analysis of Local Field Potential (LFP) brain signals recorded from rodents
- **Web Developer / Designer**  
*Université Laval — Quebec, QC* *2021 - 2022*
  - The official homepages of COPL department of Université Laval, and YMLab Research Group

## Certifications

- **Keysight Pathwave ADS EM Advanced** 2021  
*Keysight & CMC Microsystems*
- **COMSOL Low- and High-frequency Electromagnetics Modeling** 2020  
*COMSOL & CMC Microsystems — Workshop held at University of Waterloo*

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Last Updated: Apr 2025

This online version has some fields redacted as *[REDACTED]* for privacy. The full version is available upon request.