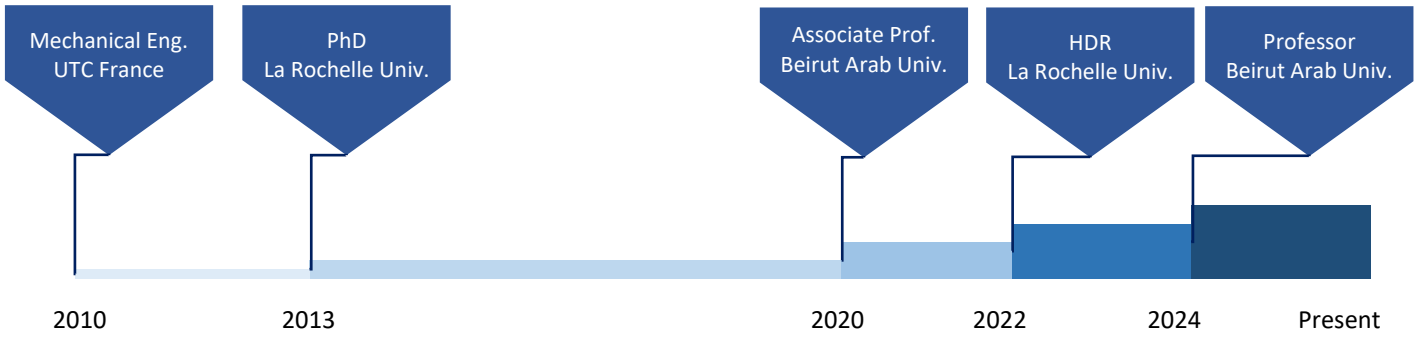
CURRICULUM VITAE

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1. Research Profile and Proposed Project

Current research work: AI-Assisted Reconstruction and Control of Turbulent Impinging Jets for Aeroacoustic Noise Reduction and Heat Transfer Optimization.

The project aims to develop innovative experimental and numerical tools to understand and control turbulent impinging flows. It focuses on integrating advanced imaging techniques (stereo-PIV and tomographic PIV) with machine learning (convolutional neural networks and machine learning models) to reconstruct velocity fields, reduce acoustic emissions, and optimize heat transfer. The results target industrial applications (heat exchangers, cooling systems, ventilation, and turbines), as well as societal benefits in energy efficiency and noise reduction.

2. Research Performance

Research Output

• Indexed **publications:** more than **50 articles** indexed in Scopus, with several hundred citations and an h-index of **12 (Scopus data** as of June 15, 2026).
• Journal rankings: **most publications** appear in journals ranked Q1 (top 25%) or Q2 in their fields according to SCImago / Scopus, often in the 90th–95th percentile for Q1 journals and the 75th–85th percentile for Q2 journals.
• **Examples of journals:**
– **Physics of** Fluids (Q1; percentile ≈ 95–97);
– **European Journal of Mechanics – B/Fluids** (Q1; percentile ≈ 90–95);
– **Alexandria Engineering Journal** (Q1; percentile ≈ 95–97);
– **Results in Engineering** (Q1; percentile ≈ 90–95);
– **Energy Reports** (Q1; percentile ≈ 85–90);

– **Fluids** (Q2; percentile ≈ 75–85);
– Arabian **Journal for Science and Engineering** (Q2; percentile ≈ 75–85).

Contributions and Originality

• Advanced **experimental approaches:** development and implementation of stereo-PIV, **tomographic PIV,** and **time-resolved PIV measurements** to visualize and quantify turbulent structures in impinging jets.

• Artificial **intelligence:** application of convolutional **neural network (CNN)** algorithms and machine **learning** models to reconstruct velocity fields from partial measurements and predict heat transfer and acoustic emissions.

• Aeroacoustic **coupling:** identification of sound-generation mechanisms and methods for passive and active aeroacoustic noise control.

Research Supervision

• PhD **supervision and co-supervision:** 10 ongoing or completed PhD projects focusing on jets.

• Research **collaborations: participation** in and coordination of several international collaborations with partner laboratories in France, Canada, and Saudi Arabia.

Awards and Recognition

• Most **Active Researcher 2025,** Beirut Arab University – recognition of research productivity.
• Qualification for **a professorial position,** Beirut Arab University (2025).
• National **qualification for university professor positions in France (CNU Section 60)** (2024).
• **Habilitation to Supervise Research (HDR),** University of La Rochelle (2022).

3. Scientific, Technological, and Societal Impact

Scientific Impact

• Research on impinging jets and turbulent field reconstruction contributes to a better understanding of turbulent flow dynamics, heat transfer, and sound generation.

• The AI methods developed open new opportunities for analyzing large experimental datasets and creating high-performance predictive models.

• Results are widely disseminated through international publications, conference presentations, and multidisciplinary collaborations.

Technological and Economic Impact

• Noise **reduction: aeroacoustic** control helps improve acoustic comfort and quality of life, particularly in industry and aeronautics.

• Knowledge **transfer: the** research has led to short training courses, science outreach activities, science–society events, and partnerships with industrial stakeholders.

Relevance to the Lebanese National Context

• The project addresses Lebanon's urgent energy needs by proposing solutions to reduce energy demand and associated costs in cooling, HVAC, and ventilation systems.

• It contributes to developing **a national center of expertise** in artificial intelligence applied to engineering, strengthening the innovation capacity of local universities and companies.

• The research contributes to training young Lebanese researchers and engineers, supporting talent retention and the creation of skilled jobs.

• Collaborations with the Agence Universitaire de la Francophonie (AUF) and partner institutions have enabled applied research projects addressing local challenges.

4. International Engagement

Partnerships and Networks

• La **Rochelle University – CNRS LaSIE: jointly** supervised doctoral theses, collaborative projects, joint publications, and research visits.

• University **of Poitiers:** project on fault prediction in ventilation systems; co-supervision of PhD students.

• École **Polytechnique de Montréal** and **the University of Calgary:** researcher exchanges and joint publications.

Francophone Training and Mobility

- Hosting French PhD candidates and students in Lebanon and participating in mobility programs supported by the AUF and CNRS.
- Disseminating research findings in French through articles, teaching, seminars, and outreach activities for French-speaking audiences.
- Recipient of the SAFAR mobility **scholarship** (2020) and an **AUF research mobility scholarship** (2022).
- Delivered the hands-on training course **"AI for Engineers: Tools, Applications, and Opportunities,"** organized by **the AUF's CNF/CEF in Tripoli** in collaboration with Beirut Arab University – Tripoli Campus.
- Active participation in the activities **of the CNF/CEF** in Tripoli, including serving as a jury member at hackathons and events promoting scientific innovation and entrepreneurship.
- Contribution to the development of Lebanon's Francophone scientific ecosystem by organizing and delivering training courses, seminars, and awareness activities on emerging technologies, particularly artificial intelligence, in partnership with the AUF.

5. Professional Experience and Responsibilities

• Professor, **Department of Mechanical Engineering, Beirut Arab University** (2025–present).
• Visiting **Researcher, University of Sydney** (summer 2023).
• **Associate Professor, Beirut Arab University** (2020–2025).
• Assistant **Professor (2014–2020).**
• Temporary Teaching and Research Associate (ATER), University of La Rochelle **(2013–2014).**
• **Postdoctoral placements and** collaborations: École Polytechnique de Montréal (LADYF Laboratory, 2012).

Other Responsibilities and Service

• Member of the **Scientific Committee** of the Order of Engineers in North Lebanon (2019–2021).
• Member **of the Faculty of Engineering** ABET Accreditation Committee (BAU).
• Initiator and coordinator of new courses **in acoustics and fluid mechanics.**
• Coordinator of fluid mechanics courses across the university's two campuses.
• Contribution to the development of a framework **cooperation agreement between** the University of La Rochelle and BAU.

6. Future Directions and Contributions

My current project aims to strengthen research capacity in fluid mechanics and heat transfer in Lebanon and promote a culture of innovation based on artificial intelligence. Expected outcomes include the optimization of critical thermal systems and the development of aeroacoustic control tools. This could create opportunities for technology transfer to national and international industry, while training a new generation of students and engineers capable of addressing Lebanon's energy and environmental challenges.