Taha Koleilat

Curriculum Vitae

✉ *tahakoleilat@gmail.com*
My Webpage
Google Scholar
Github
Linkedin

Education

2024–present **PhD, Electrical & Computer Engineering**, *Concordia University*, Montreal, Canada.
Deep Learning, Computer Vision, Natural Language Processing, Multi-modal Learning, Foundation Models, Medical Image Analysis

2023–2024 : **Master of Applied Science, Electrical & Computer Engineering**, *Concordia University*, Montreal, Canada.

CGPA : 4.00/4.30

Coursework Medical Image Processing, Applied Machine Learning & Evolutionary Algorithms, Biological Signal Processing, Deep Learning

2019–2023 : **Bachelor of Engineering, Computer & Communications Engineering**, *American University of Beirut*, Beirut, Lebanon.

CGPA : 4.0/4.0

Coursework Introduction to Machine Learning, Computer Networks, Cryptography & Network Security, Software Engineering, Mobile Networks & Applications, Internet Security, Control Systems, Communication Systems, Embedded & IoT Systems, Advanced Optimization Techniques

Minor Economics

Experience

Graduate Research Assistant, IMPACT and Health-X Labs

September 2023 – present ***Developing Novel Methodologies for Deep Learning in Medical Applications***.
Working at the intersection of Images and Text to bring forth generalizable foundation models

1. Training and adapting Vision-Language models for Biomedical data representation
2. Building versatile foundation models for biomedicine that can be utilized for a wide range of downstream tasks
3. Implementing data-efficient cross-modal learning techniques to bridge the gap between medical imaging and textual data for enhanced diagnostic insights

Supervisors :

- **Dr. Hassan Rivaz**, *Professor & Concordia University Research Chair, Department of Electrical & Computer Engineering*, Concordia University, (*Personal Web-page*)
- **Dr. Yiming Xiao**, *Associate Professor, Computer Science & Software Engineering*, Concordia University, (*Personal Web-page*)

Artificial Intelligence Engineer, Reality AI Lab

April 2024 – January 2025 ***Designing and Developing new tools for Education using LLMs***.

1. Leveraging technologies such as OpenAI and Google Gemini for developing AI tools

2. Developing ReX, an AI Coach who serves as a steadfast career companion for learners, offering personalized coaching, mentorship, and support throughout the various phases of their career lifecycle
3. Integrating novel features into Kai, an AI educator that ingests different documents to generate summaries, multiple-choice questions, and syllabi.

Research Intern, Trusted Networks Lab

May 2022 – Oct 2022 ***Designing a novel Consensus Protocol for Supply Chain Scenarios utilizing Email services***.

1. Developed a "Cyber-Social Consensus" dApp using Web3.py with a Tkinter GUI.
2. Integrated Email services with Solidity Smart Contracts to automate supply chain voting.
3. Enhanced decision-making fairness and reliability in the voting process.

Supervisor **Dr. Raja Jurdak**, *Professor of Distributed Systems & Chair in Applied Data Sciences*, Queensland University of Technology

Publications

- **Taha Koleilat**, Hojat Asgariandehkordi, Omid Nejati Manzari, Berardino Barile, Yiming Xiao, and Hassan Rivaz, "MedCLIPSeg: Probabilistic Vision–Language Adaptation for Data-Efficient and Generalizable Medical Image Segmentation," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026 [**Paper**][**Page**].

- **Taha Koleilat**, Hojat Asgariandehkordi, Hassan Rivaz, and Yiming Xiao, "BiomedCoOp: Learning to Prompt for Biomedical Vision-Language Models," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025 [**Paper**][**Page**].

- Omid Nejati Manzari, Hojat Asgariandehkordi, **Taha Koleilat**, Yiming Xiao, and Hassan Rivaz, "Sparse Spectral LoRA: Routed Experts for Medical VLMs," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2026 [**Paper**][**Page**].

- **Taha Koleilat**, Hojat Asgariandehkordi, Hassan Rivaz, and Yiming Xiao,"MedCLIP-SAM: Bridging Text and Image Towards Universal Medical Image Segmentation," in *27th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2024, (Acceptance rate: $\simeq$ 30%)[**Paper**][**Page**].

- **Taha Koleilat**, Hojat Asgariandehkordi, Hassan Rivaz, and Yiming Xiao,"MedCLIP-SAMv2: Towards Universal Text-Driven Medical Image Segmentation", *Medical Image Analysis*, 2025 [**Paper**][**Page**].

- Pascal Spiegeler*****,**Taha Koleilat***, Arash Harirpoush, Corey S. Miller, Hassan Rivaz, Marta Kersten-Oertel, Yiming Xiao, "TextSAM-EUS: Text Prompt Learning for SAM to Accurately Segment Pancreatic Tumor in Endoscopic Ultrasound", *the Third ICCV Workshop on Computer Vision for Automated Medical Diagnosis (CVAMD)*, 2025 [**Paper**][**Code**].

- Hamza Rasaee, **Taha Koleilat**, Hassan Rivaz,"GroundingDINO-US-SAM: Text-Prompted Multi-Organ Segmentation in Ultrasound with LoRA-Tuned Vision-Language Models", *IEEE TUFFC*, 2025 [**Paper**][**Code**].

- Omid Nejati Manzari, Hojat Asgariandehkordi, **Taha Koleilat**, Yiming Xiao, and Hassan Rivaz,"Medical Image Classification with KAN-Integrated Transformers and Dilated Neighborhood Attention", *Applied Soft Computing*, 2025 [**Paper**][**Code**].

- **Taha Koleilat**, Hassan Rivaz, and Yiming Xiao,"Singular Value Few-shot Adaptation of Vision-Language Models", 2025 (Under Review), 2025 [**Paper**][**Code**].

Honors and Awards

2025 Recipient of the ***FRQNT Doctoral Training Scholarship***, awarded after being ranked 2nd by the committee reviewing my application. This scholarship supports my research on transforming healthcare through universal, efficient, and scalable Vision-Language Models (VLMs) (Value: $100,000 CAD).

2025 Recipient of the ***Concordia University Doctoral Graduate Fellowship***, awarded to exceptional doctoral students for outstanding research and academic excellence (Value: 28,000$ CAD).

2024 – 2025 Received two ***Gold Level IEEE TMI Distinguished Reviewer Certificate*** *as an acknowledgment of my significant contribution to the journal.*

2024 Recipient of the ***International Tuition Award of Excellence*** *which reduces the tuition to the Quebec rate* (Value: 47,463$ CAD)

2023 Recipient of the ***Concordia Merit Scholarship*** *entrance award for Master's students* (Value: 5,000$ CAD)

2023 Graduated from the American University of Beirut with ***High Distinction***

2023 Received the ***Dean's Award for Creative Achievement*** *for our project titled "COVID-19 Indoor Access Rules Verification using ML" which was placed 1st among 30 other groups in Computer Engineering.*

2021 Recipient of ***MEPI-TLS Scholarship*** awarded by AUB Tomorrow's Leaders Gender Scholars Program (Value: 13,110$ USD)

2020 – 2023 Recipient of ***A.M. Rabbat Endowed Scholarship*** (Value: 5,244$ USD), ***Dr. Saad Hamdi AlZaim and Family Scholarship*** (Value: 9,911$ USD), and ***Nabil Zuhair Haddad Scholarship*** (Value: 24,822$ USD) to provide additional financial support to qualified students who excel academically pursuing degrees in Engineering

2019 – 2023 Placed on the ***Dean's Honor list*** for all semesters attended at the American University of Beirut.

Computer skills

Languages Python, Java, C/C++, SQL, JavaScript, Solidity, R, LaTeX

Frameworks PyTorch, TensorFlow, Django, Flask

Tools Git, Docker, Google Cloud Platform, Overleaf, Visual Studio, PyCharm, IntelliJ, Eclipse, Excel

Libraries OpenCV, Scikit-learn, pandas, NumPy, Matplotlib

Position of Responsibility

2024-Present **Reviewer for IEEE TMI and TPAMI, MICCAI, MedIA, Nature Medicine**.

2024-present **Student member of IEEE**.

2023-present **Student member of Quebec Bio-imaging Network (QBIN)**.

Teaching

COEN366: Communication Networks & Protocols, Concordia University.

COMP233: Probability & Statistics, Concordia University.

COMP248: Object Oriented Programming I, Concordia University.

COMP478/6771: Image Processing, Concordia University.

ELEC366: Telecommunication Networks, Concordia University.

EECE311: Electronic Circuits, American University of Beirut.