Dr Alaa Daher

Academic Curriculum Vitae | October 2026

Assistant Professor and Coordinator of the Biomedical Engineering Program
Electrical and Computer Engineering Department, Faculty of Engineering
Beirut Arab University, Lebanon

a.daher@bau.edu.lb | +961 1 300110 ext. 3410 | +961 70 455368

Academic Profile

Biomedical engineering academic working in physiological signal processing, artificial intelligence in healthcare, brain-computer interfaces, and intelligent medical devices. Research covers ECG, EEG and EMG analysis, Parkinson's disease assessment, neurorehabilitation, extended Holter monitoring, and wireless telemedicine. Academic responsibilities include program coordination, curriculum development, graduate supervision, and accreditation-oriented assessment.

Education

PhD in Advanced Signal Processing and Automation Engineering, University of Normandy, Rouen, France, 2018.
Thesis: Diagnosis and Prognosis for Preventive and Predictive Maintenance. Application to the distillation column.

Engineering Diploma (master's degree) in Biomedical Engineering, Islamic University of Lebanon, Beirut, 2009.
Thesis: Development of an Automatic External Cardioverter System.

Academic Experience

- Beirut Arab University, Faculty of Engineering: full-time, 2020–present; part-time, 2018–2020; part-time Laboratory Instructor, 2016–2018.
- Lebanese University, Doctoral School for Sciences and Technology: full-time, 2009–2020.
- Université de Technologie et de Science Appliquées Libano-Française, Faculty of Engineering: part-time, 2010–2019.
- City University, Faculty of Engineering: part-time, 2013–2019.

Industry Experience

- Director, MediLab SAL, Tripoli Office, 2016–2019.
- Biomedical Engineer, MediLab SAL, medical equipment company, Beirut, 2014–2019.

Research Interests and Activities

- Biomedical signal processing: ECG, EEG and EMG analysis, physiological monitoring, feature extraction, modeling and compression.
- Artificial intelligence in healthcare: machine learning, deep learning, predictive modeling and adaptive neuro-fuzzy inference systems.
- Brain-computer interfaces, neuroengineering, Parkinson's disease assessment and neurorehabilitation.
- Medical instrumentation, sensors, wearable and embedded systems, smart healthcare and wireless telemedicine.
- Multi-university research collaboration in neuroengineering, ECG modeling and intelligent healthcare systems.
- Participation in doctoral research studies involving electromyography and kinesthetic imagery.
- Erasmus+ academic capacity-building and collaboration through DeCAIR and ICAIR.

Graduate Supervision and Mentorship

- Co-supervisor, PhD research of Mahasin El Dimassi: Design of a Smart System for Early Prediction of Parkinson's Disease with RUC Assessment; active research.
- Supervisor, master's thesis of Ongel Al Hajj, 2025–2026.
- Supervisor, master's thesis of Abbas Abou Ahmad, Islamic University of Lebanon, 2021.
- Examiner, master's thesis of Mariam Moussalli, Beirut Arab University, 2022.
- Supervised more than 20 final-year projects, including BCI device control, AI-based ECG and EMG analysis, eye tracking, Holter compression through Fourier modeling, and intelligent strabismus diagnosis.
- Academic advising, internship and research guidance, recommendation letters, and mentoring for student workshops and international activities.

Teaching and Curriculum Development

- Coordinate Biomedical Engineering curriculum development, scheduling, course planning and continuous improvement at Beirut Arab University.
- Develop course materials in biomedical instrumentation, signal processing, machine learning and tissue engineering.
- Use project-based and case-based learning, MATLAB assignments, independent literature reviews, student-led seminars and interdisciplinary design projects.
- Prepare course specifications and reports; review assessment tools, rubrics, examinations and student learning outcomes in support of ABET-oriented quality assurance.

Teaching in 2025–2026: Fall — BIME411, BIME413, BIME514, PHYS281, BIME499, BIME501 and BIME502. Spring — BIME310, BIME511, BIME336, PHYS281, BIME499, BIME501 and BIME502.

IEEE Leadership and Professional Service

- Industrial Ambassador Representative, IEEE Engineering in Medicine and Biology Society; Industry Ambassador, IEEE EMBS Lebanon Chapter.
- Member, IEEE EMBS Worldwide Chapter Development Committee.
- Advisor, IEEE EMBS Student Chapter, Beirut Arab University.
- Scientific Committee Member, IEEE EMBS Lebanon Chapter.
- Publication Chair, International Conference on Intelligent Computing and Next-Generation Technologies (ICONET26), Beirut Arab University, October 15–16, 2026.
- Organizing Committee Member and Session Chair, ICABME 2025; contributions to conference preparation and sponsor acquisition.
- Organizing Committee Member, Lebanon National Students Competition (LNSC 2025); organizational and sponsor acquisition activities.
- Reviewer for international journals and conferences.
- Member, IEEE Engineering in Medicine and Biology Society; participant in IEEE Lebanon Section General Assembly and student-branch activities.
- Registered member, Order of Engineers and Architects, Tripoli.

Additional review service: Biomedical Signal Processing and Control; SN Computer Science; NOLTA 2026; ETECOM 2026; ICM 2026; ICONET26; and IC2SPM 2026. Confirmed reviewer appointment: ICAISET 2027. Program committee service: IEEE DTTIS 2026 and ICONET26.

University and Community Service

- Coordinator, Biomedical Engineering Program, Faculty of Engineering, Beirut Arab University.
- Member, university Scheduling Committee.
- Council Secretary, Faculty of Engineering Postgraduate Committee.
- Member, internal ABET Committee, Biomedical Engineering Program.
- Faculty of Engineering representative, International Relations Committee, Beirut Arab University.
- Participation in departmental and program meetings, quality assurance, curriculum development and Erasmus+ collaboration meetings.
- Member, Cultural Activities Committee, Municipality of Akkar Al-Atika, 2010–2018.
- Contributions to public-health awareness, engineering outreach, and scientific and cultural student activities.

Invited Speaking

“From Intelligence to Action: Smart Systems for Brain-Driven Healthcare.” Semaine du Cerveau, 3rd edition, MOHAR Research Laboratory, Faculty of Public Health, Lebanese University, December 5, 2025.

“Design and Development of Smart Systems for Neurological Disorders Rehabilitation.” Colloquium Innovations Thérapeutiques en Neurologie et Technologies Emergentes pour la Réhabilitation, Université Sainte Famille with the Order of Physiotherapists of Lebanon, October 11, 2025.

Awards and Honors

- First Place, Data Acquisition and LabVIEW Hackathon, BAU–SAAB RDS, 2023.
- Certificate of Excellence, BAU Faculty of Engineering and IEEE Lebanon, 2023.
- First Place, AI-based Strabismus Diagnosis System, IEEE EMBS Lebanon, 2021.
- First Place, Stabilometric Platform for Postural Stability, LBSC, 2021.
- Third Place, ECG Biometric Modeling, LBSC, 2021.
- Third Prize, ECG Authentication System, Order of Engineers and Architects, Tripoli, 2019.
- Second Prize, Medical Eye Disease Detection System, LIRA, 2018.
- Notice of Contribution, Lebanese University Doctoral School, 2017.
- First Prize, Detection and Rehabilitation Platform, LIRA, 2014.
- First Prize, Eye Movement Mouse Control, National Instruments, 2013.

International Training and Professional Development

- Machine Learning, University of Genoa, Italy, 2022–2023; Deep Learning and Computer Vision, 2022; Machine Learning Online Intensive, 2022.
- Advanced Data Science, University of Granada, Spain, 2022.
- eHealth, Big Data and Medical Informatics, Al-Azhar University, Cairo, 2022.
- Steering Committee Meeting, Athens, Greece, 2023.
- Jordanian Artificial Intelligence Season, participation beginning April 2026.
- Fifth Annual Scientific Research Day, Beirut Arab University, February 13, 2026.
- Digitization of Course Files workshop, Beirut Arab University, January 2026.
- IEEE CS SYP TechX'25 Lebanon, Notre Dame University–Louaize, April 12, 2025.

Additional Seminars and Academic Engagement

2025: Higher-education regulations and development activities (August 27); LinkedIn Made Simple (September 23); Lighting Protection and Earthing Systems (October 1); Principles of Hardware Development (October 2); Neurodegeneration and Embodied Intelligence (October 8); FutureSec: Redefining Cybersecurity (October 29); Fuel Your Mind, Nourish Your Body (October 30); Unlocking the Invisible: The RF Tech Driving 6G Innovation (November 27).

2025–2026: Professional Guidelines for Engineering Graduates; partnership meeting concerning the Arab Institute for Training and Research in Statistics; Craft the Future of Luxury Fragrance workshop (February 3, 2026).

Recent Conference Papers

1. Alaa Daher, Mohammad Ayache and Soubhi Abou Chahine. “AI-Driven Communication-Aware Lightweight Transformer–Neuro-Fuzzy Framework for Robust EEG Monitoring over Wireless Telemedicine Networks.” MENACOMM 2026, Tunisia, May 2026. Accepted; listed in the official conference program.

2. Mahasin El Dimassi, Alaa Daher, Ziad Osman, Ziad Doughan, Mazen Jabre and Khodor Ozoor. “Detection of Parkinson’s Disease Through Voice Analysis Using Shimmer and Jitter Techniques with Machine Learning.” First International Conference on Emerging Innovation and Digital Technology (ICEIDT 2025), Maldives, November 24–25, 2025. Published in conference proceedings.

3. Alaa Daher, Mostapha Bizri, Bassem Kaissi and Sobhi Abou Chahine. “Deep Learning–Based ECG Compression for Extended Holter Monitoring.” Second International Conference on Universities and Artificial Intelligence Technology, Amman, Jordan, October 18–19, 2025. Published in conference proceedings.

4. Alaa Daher, Tala Mokhtar Alomari, Diana Darwich and Sara Dabaja. “From Thoughts to Text: Unlocking Your Mind with EEG.” Eighth International Conference on Advances in Biomedical Engineering (ICABME 2025), Beirut Arab University, October 2025. Presented.

5. Mahasen Khalil El Dimassi, Alaa Daher, Ziad Doughan and Ziad Osman. “Analysis of Brain (EEG) and Muscle (EMG) Signaling Features to Characterize the Stages of Parkinson’s Disease using ANFIS.” Eighth International Conference on Advances in Biomedical Engineering (ICABME 2025), Beirut Arab University, October 2025. Presented.

Journal Publications

1. A. Daher, Y.Chetouani, G.Hoblos, and M.Khalil. "New Prognosis approach for preventive and predictive maintenance- Application to a distillation column”. Chemical Engineering Research and Design Journal 153 (2020): 162-174.

2. A.Daher, Y.Chetouani, G.Hoblos, and M.Khalil, Parzen window distribution as new membership function for ANFIS algorithm-Application to a distillation column faults prediction." Chemometrics and Intelligent Laboratory Systems journal 175 (2018): 1-12.

3. Rifai Sarraj, A., A. Daher, and J. Khayat. "Kinesthetic imagery and visual observation improve lumbar repositioning in patients with low back pain." Lebanese Medical Journal 66, no. 4 (2018): 219.

4. Tout R, Maarrawi J, Halimi M, & Daher A (2020) Electromyography Study of the Contraction of the Scalene and Rectus Abdominis during the Respiratory Cycle in Healthy Subjects. J Diagn Tech Biomed Anal 9:1. doi: 10.37532/jdtba.2020.9(1).141.

5. Abbas. Abou Ahmad, Mohamad. Ayache & A. Daher. “Sum of Sine Modeling Approach as a New Processing Technique for a Biometric System Based on ECG Signal”. International Journal of Biology and Biomedical Engineering, Volume 14, 2020.

Manuscript Submitted

A. Daher, L. Yassine and A. Alaywan. “Postural Stability Assessment Using a Stabilometric Platform.” Submitted to Beirut Arab University Science and Technology Journal, November 2021.

Earlier Conference Publications and Presentations

1. D. Alamddin, M.hamze, M. Khalil, and A. Daher 'Development of a system for reading and automatic interpretation of an antibiogram, ICABME11, Lebanese University, Tripoli, Lebanon, 6-8 July 2011.

2. S.Al-Omar, W. Kamali, M. Khalil and A. Daher ' Classification of EEG Signals to Detect Epilepsy Problems', ICABME13, doctoral school of sciences and technology, Lebanese University, Tripoli, Lebanon, 11-13 September 2013.

3. I. Hamze, A.Daher and M. Halimi 'Scientific Study of the Immediate Fatigue of Prepubertal Students While Carrying a Heavy Load of 20% of the Body Weight', LAAS 2014 (Lebanese Association for the Advancement of the Science), Lebanese University, Hadath, Lebanon, 27- 29 March 2014.

4. A.Daher, Y.Chetouani, G.Hoblos, and M.Khalil, 2016, November. Modified fuzzy c-means combined with neural network-based fault diagnosis approach for a distillation column. In Multidisciplinary Conference on Engineering Technology (IMCET), IEEE International (pp. 185-190). IEEE.

5. J.Deep, A.Daher, and F.Zakaria 'Eye Movement Signal Analysis to Detect Early Falling Asleep While Driving, LAAS 2017 (Lebanese Association for the Advancement of the Science), Lebanese University, Fanar, Lebanon, IEEE, 06-07 April 2017.

6. A. Daher, Y.Chetouani, G.Hoblos, and M.Khalil. "Parzen window distribution as new membership function for ANFIS algorithm-Application to a distillation column faults prediction." Safe process conference, IFAC, IEEE International. IEEE, 2018.

7. Rifai Sarraj, A., A. Daher, and A. Diab" Effectiveness of an Intervention to Reduce Daily Hours of Sitting Time (StandMoveActiv) in Lebanese Universities Students: Multicenter" (2019)

8. Rifai Sarraj, A., A. Daher, H.Salloum and F. Ayyoubi "Effect of the educational program in reducing sitting time in Lebanese university students: a randomized control trial." 13th annual international technology, education, and development conference, Valencia, Spain (2019) In INTED2019 Proceedings, pp. 1012-1018. IATED, 2019.

9. Khalil, H., Diab, A., Atallah, T., Daher, A. and Sarraj, A.R., 2019, October. "Surface electromyography activity of trunk muscles during conventional and non-conventional wheelchair propulsion". In 2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 1-4). IEEE.

10. Nour, A.L.I., DAHER, A., CHAKOUCH, M., NACHAR, S. and KAMALI, W., 2019, October. "Development of a New Biometric Authentication Approach Based on Electrocardiogram Signals". In 2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 1-4). IEEE.

11. ABBOUD, N., DAHER, A., DARWICH, M., NACHAR, S. and KAMALI, W., 2019, October. "Development of a New Real-Time Epilepsy Prediction Approach Based on Adaptive Neuro-Fuzzy Inference System". In 2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 1-4). IEEE.

Earlier Conference Publications and Presentations Continued

12. Nassim, S., Chakouch, M., Diab, A. and Daher, A., 2019, October. “Signal Analysis of Brain-Computer Interface (BCI)”. In 2019 Fifth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 1-4). IEEE.

13. Abbas. Abou Ahmad, Mohamad. Ayache and A. Daher. “Sum of Sine Modeling Approach as a New Processing Technique for a Biometric System Based on ECG Signal”. Computing, Mobility, and Manufacturing conference, 08-10 December 2020, Khobar, Saudi Arabia.

14. Daher, A., Yassin, S., & Ayache, M. (2021, October). A Novel ECG Waves Detection Followed by a New Compression Technique Based on Fourier Series Modeling for up to 26 Days Holter Monitor. In 2021 Sixth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 163-166). IEEE.

15. Daher, A., & Rammal, Z. (2021, October). Development of a System for Detection, Diagnosis, and Treatment for Eye Strabismus Disease. In 2021 Sixth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 125-129). IEEE.

16. Tout, R., & Daher, A. (2021, October). Synergy Relationship Between The Scalene And The Rectus Abdominis During The Respiratory Cycle In Healthy Subjects. In 2021 Sixth International Conference on Advances in Biomedical Engineering (ICABME) (pp. 116- 120). IEEE.

17. Daher, A., Yassin, S., Alsamra, H., & Abou Ali, H.. (2021, December). Adaptive Neuro-Fuzzy Inference System for Real-Time Parkinson Seizure Prediction. In 2021 4th International Conference on Bio-Engineering for Smart Technologies (BioSMART), Paris, France, (pp. 125-129). IEEE.

18. M. N. Younis, S. H. Sleiman, S. Khadra, A. Zaylaa, A. Daher, and M. Ayache, “Building a Brain Computer Interface (BCI) Using Electroencephalogram (EEG) Signals’ Classification,” presented at the 2023 Seventh International Conference on Advances in Biomedical Engineering (ICABME), IEEE, 2023, pp. 130–136.

19. A. Daher, M. Ayache, A. J. Zaylaa, M. Z. A. Hadba, Y. Aycha, and H. Hmadeh, “Artificial Intelligence-Powered System for Detecting, Diagnosing, and Rehabilitating Strabismus Disorder,” presented at the 2023 Seventh International Conference on Advances in Biomedical Engineering (ICABME), IEEE, 2023, pp. 220–225.

20. A. J. Zaylaa, A. Daher, M. Ayache, N. Omeirat, R. Mahmoud, and B. Abou Hawili, “Early Diagnosis of Osteoporosis: An Artificial Intelligence-Based Framework,” presented at the 2023 Seventh International Conference on Advances in Biomedical Engineering (ICABME), IEEE, 2023, pp. 226–231.

21. A. Daher, M. Ayache, E.-H. Heba, M. K. Fattoum, and O. Hajj, “Wireless Healthcare Monitoring System for Heart Diseases Classification using Efficient ECG-Based Wave Modeling and Machine Learning Techniques,” presented at the 2023 Fifth International Conference on Advances in Computational Tools for Engineering Applications (ACTEA), IEEE, 2023, pp. 19–24.

22. M. Ayache and A. Daher, “Engineering Education Program Enhancement Based on Modern Teaching Methodologies: System of Systems Approach,” presented at the 2023 18th Annual System of Systems Engineering Conference (SoSe), IEEE, 2023, pp. 1–6.