



**1. Name and Academic Rank: *Dr. Alaa DAHER***

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Electrical and Computer Engineering Department  
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**2. Education: Degrees, Discipline, Institution and Date:**

- Doctorate (Ph.D.) in Advances Signal Processing, and Automation Engineering from the University of Normandy, Rouen, France, 2018  
Thesis title: Diagnosis and Prognosis for Preventive and Predictive Maintenance. Application to the distillation column
- Engineering Diploma (Master's degree) in Biomedical, from Islamic University of Lebanon (IUL), Beirut, 2009  
Thesis title: Development of an Automatic External Cardioverter System

**3. Work Academic Experience**

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

**4. Non academic experience**

- Biomedical Engineer, MediLab Sal, Medical equipment Company, New Center Bldg. 6th Floor, MarElias Street, Beirut, 2014-2019
- Director of MediLab Sal, Tripoli office , 2016-2019

**5. Certification or professional Registration**

- Member in the Order of Engineers and Architects of Tripoli

**6. Current membership in professional organizations**

- Representative of the faculty of engineering in BAU university in the international relation committee
- 2023- present, Member in the worldwide IEEE– EMBS (Medicine & Biology Engineering) chapter



- 2021- present, Industry Ambassador for the IEEE– EMBS (Medicine & Biology Engineering) Lebanon chapter
- 2013-present, Member in the scientific committee of EMBS – IEEE, Lebanon Chapter (Engineering in Medicine & Biology Society)
- 2015-present, Member in the organizing committee of IEEE-ICABME (International Conference on Advances in Biomedical Engineering)
- Scientific reviewer in several multidisciplinary engineering and technologies international conferences and journals.
- Organizer and speaker for several engineering events and conferences

#### **7. Honors and Awards:**

- Certificate of excellence from the dean of faculty of engineering at BAU, prof Adel Alkordi and IEEE Lebanon section president Prof. Hadi Kanaan for the second-price award in poster session competition (project supervisor), BAU-IEEE day. Competition, BAU, 7 Feb, 2023
- Certificate of appreciation from the dean of faculty of engineering at BAU, prof Adel Alkordi and SAAB RDS vice president ENG. Ralph Saab for the first-place award in Data Acquisition Competition and LabVIEW Hackathon, BAU-SAAB RDS. Competition, BAU, 2 May, 2023
- Third place award for the research project Sum of Sine Modeling Approach as a New Processing Technique for a Biometric System Based on ECG Signals given by Lebanese Biomedical Student Competition LBSC2021, 2021, Beirut
- First place award for the development of a postural stability assessment using a stabilometric platform given by Lebanese Biomedical Student Competition LBSC2021, 2021, Beirut
- Third price award for Development of a New Biometric Authentication Approach Based on ECG Signals project given by the Order of Engineers and Architects, 2019, Tripoli
- Second price award for the Development of a system for detection, diagnosis, and treatment for many eye diseases, given by LIRA (Lebanese Industrial Research Achievements) program, 2018, Beirut
- Notice from the dean of the doctoral school for sciences and technology for the development of liquid chromatography-mass spectrometer (LC-MS) system, 2017, Beirut
- First award for the development of a Platform for Detection, Diagnosis, and Rehabilitation for physiological and nervous diseases was given by LIRA (Lebanese Industrial Research Achievements) program, 2014, Beirut
- First price award for the Development of a static and dynamic balance analysis system given by Presidency of the Lebanese Council of Ministers, 2013, Beirut
- First price award from national instruments company Beirut, 2013, for the two projects:
  - 1- Stability measurement and rehabilitation system
  - 2- Controlling computer mouse using eyes movements
- Second price award for the Development of a New Stability Platform System given



by the Eighth Arab exhibition for technology students, 2012, Beirut

## 8. Service activities

- Member in the cultural activities in the municipality of Akkar Al Atika (2010-2018)

## 9. Principal publications and presentations:

### 9.1 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.**
- 6- **A. Daher**, L. Yassine, A. Alaywan "Postural Stability Assessment Using a Stabilometric Platform". **Submitted to Beirut Arab University, Science and Technology Journal, November, 2021**

### 9.2 Conference Proceedings

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. ABOUD, 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.
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.

## 10. Professional Development Activities

- **DeCAIR Erasmus+ project,** steering committee meeting, Creative Thinking Development Solonos and Empedokleous- Attiki Greece, 23 May to 28 May 2023
- **DeCAIR Erasmus+ project,** Intensive online course training: Machine Learning University of Genoa- Italy, 6 February to 1 May 2022
- **DeCAIR Erasmus+ project,** Intensive contact course training: Advanced Data Science, University of Granada- Spain, 23 May to 27 May 2022
- **DeCAIR Erasmus+ project,** Intensive contact course training: Deep Learning & Computer Vision University of Genoa- Italy, 12 July to 22 July 2022



- **ICAIR Erasmus+ project**, Intensive contact course training: eHealth, Big Data, Medical Informatics & technology, University of Al Azhar- Cairo- Egypt, 24 September to 27 September 2022
- **DeCAIR Erasmus+ project**, Intensive contact course training: Machine Learning University of Genoa- Italy, 1 February to 5 February 2022

## 11. Research Activities

1. *Co-supervision of the Ph.D. thesis of Ms. Mahasin Dimasi, Title: Design of a Comprehensive Smart Systems for Early Prediction of Parkinson's Disease with Remaining Useful Crisis (RUC) Assessment.*
2. *During my research career, I participated in two Ph.D. thesis:*
  - Electromyography of Scalene and Rectus Abdominis during the respiratory cycle in healthysubjects. Corresponding Author: **Rola Tout**
  - Kinesthetic imagery and visual observation improve lumbar repositioning in patients with low back pain. Corresponding Author: **Joy Khayat**
2. *Participated in Master. thesis:*
  - Examiner of master defense of Mariam Moussalli 20 June 2022, BAU
  - Supervisor of master project of Abbas Abou Ahmad, IUL, 2021