

KABALAN TOUFIC CHACCOUR

Male, September 4, 1981, Lebanese

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EDUCATION

Qualified Associate Professor (France 2019, 2025)

- **PhD in Engineering Sciences, CNU Section: 61 (Computer Engineering, Automation and Signal Processing), Application: Digital Health (eHealth) – With High Honors**
University of Technology Belfort-MontBéliard (UTBM), Belfort, France, November 2017
Title : *Elaborating the Actimetric Profile of Fall Sensitive Patients for Early Detection of Fall Incidents*
Research Lab. : Nanomedicine, Imagery and Therapeutics (NiT Lab.), Belfort, France
Supervisor : Dr. Amir Hajjam El Hassani - *University of Technology Belfort Montbéliard, France*
Committee : Prof. Bernard Thirion Professeur - *University of Upper Alsace, France*
Prof. Francois Charpillet - *Director of Research at INRIA, France*
Prof. Benoit Macq - *Catholic University of Louvain, Belgium*
Prof. Jacques Duchène - *University of Technology of Troy, France*
Dr. Franck Gechter - *University of Technology Belfort Montbéliard, France*
Co-Supervisor 1 : Prof. Emmanuel Andres, MD, PhD - *University of Strasbourg, France*
Co-Supervisor 2 : Prof. Rony Darazi - *Antonine University, Lebanon*
Online at : <https://theses.fr/2017UBFCA016>
- **Masters in Computer and Communications Engineering - With high distinction**
Antonine University (UA), Faculty of Engineering & Technology, Hadat-Baabda, Lebanon, July 2005
- **French and Lebanese Baccalaureates, (Concentration: Mathematics)**
Collège des Frères-Mont La Salle, Ain Saadé, Lebanon, June 1999

ACADEMIC EXPERIENCE

- **Antonine University (UA), Dept. of CCE., Faculty of Eng. & Tech., Hadat-Baabda, Leb.-Full Time**
 - Head of the Computer and Communications Engineering Department, (2022 to present)
 - Associate Professor, Faculty member, (2024 to present)
 - Assistant Professor, Faculty member, (2017 to 2024)
 - Senior Lecturer and PhD student, Faculty member, (2013 to 2017)
- **Antonine University (UA), Dept. of CCE, Faculty of Eng. & Tech., Hadat-Baabda, Leb.-Part Time**
 - Lecturer, (2010 to 2013)

Subject (Lecture + Lab) ³	Category ¹	Total hours
Computer architecture (ARM7) (Lecture + Lab)	CC	971
Signals and Communication Systems (Lecture)	CC	200
Theory of Operating Systems (Lecture)	CC	39
Electromagnetics and Transmission Lines (Lecture)	TN	294
Microcontrollers (PIC+AVR) (Lecture + Lab)	TN + SN	1402
Microprocessor and Embedded Systems Design (Lecture + Lab)	TN + SN	522
Research methods (Lecture)	CC	246
Digital Image Processing (lecture + Lab)	TN	534
Embedded systems (Lecture + Lab)	TN	357
Antennas and propagation, theory and design (Lecture)	TN	81
Embedded Systems design for IoT applications (Lecture)	Masters IoT ²	8
Total hours (up to Spring 2024-25)		4714h

¹CC: Common Core | TN: Telecommunications and Networks | SN: Systems and Networks

²Interim Assistant Professor in the Masters IoT at Université Franche-Comté (UFC)

³All courses are delivered in English

PROFESSIONAL EXPERIENCE

- **YOOVO Automation (Startup)-Freelance**
Technical Consultant (2021 to present)
 - Managing the product design of consumer electronics for automation
- **DOUMMAR Contracting International s.a.l, Dora, Beirut, Lebanon-Full Time**
Application and Design Engineer (2011-2013)
 - Solution and System integrator of IP Security Systems (e.g., IPTV, IPCCTV, IP Access Control, Digital Signage, Public Address, etc.)
- **Multilane Inc. Houmal, Lebanon-Full Time**
Hardware Testing Engineer (2010-2011)
 - Test bench development of hardware architectures on FPGA
- **Fidus Systems s.a.l, Jounieh, Lebanon-Full Time**
Hardware Design Engineer (2009-2010)
 - Hardware design using embedded systems (e.g., Microcontrollers)
 - Layout and PCB design (multilayer PCB design)
 - Hardware testing and debugging
- **MacCorp Low Current and Fire Fighting Engineering s.a.r.l-Full Time**
Technical and Site Engineer (2005-2008)
 - Designing, configuring, commissioning and maintaining life safety systems, Fire Alarm (Edwards Systems Technology – General Electric), Access Control (LENEL), and security systems.

RESEARCH EXPERIENCE

Areas of Interest in Digital Health research: Gait and posture analysis; Fall detection and prediction; Sleep disorders and nocturnal falls; health signals tele-monitoring; Ambient Assisted Living (AAL) for elderly people; Ambient sensor networks; and various e-health applications.

H-index: 7, **Citations:** 493 | **Scholar profile:** [Kabalan Chaccour](#)

- Technical Program Committee (TPC) in many conferences (i.e., IEEE ICAR, IEEE MENACOMM)
- Associate researcher at SINERGIES Lab., Besançon, France
- Associate researcher at TICKET Lab., Antonine University (UA), Hadat-Baabda, Lebanon
- Peer reviewer in reputable journals (IEEE Sensors, IEEE Access, IEEE Transactions in Biomedical Eng.)

ADMINISTRATIVE & SERVICE ACTIVITIES

- **Antonine University (UA), Hadat-Baabda, Lebanon**
 - **Head of the Computer and Communications Engineering Department (2022 to Present)**
 - Managing over 1200 students and 150 faculty members in 3 campuses
 - **At the level of the Faculty of Engineering & Technology**
 - Head of the CCE Dept. council, (2022 to present)
 - Member of the Faculty of Engineering council, (2017 to present)
 - Steering head of the Final Year Project (FYP) committee, (2013 to present)
 - Student advisor, program coordinator, course coordinator, (2013 to present)
 - Member of the TICKET Lab. council, (2024 to present)
 - Member of the Program Assessment Committee (PAC), (2014 to 2016)
 - Member of the Transfer and Equivalence committee (TEQ), (2020 - 2021)
 - Member in the organizing committee of scientific events:
 - **Conferences:** ICAR'15, ICAR'17, SBS'18
 - **Competitions:** UACPC'15, 16, 17, 18
 - **Scientific events:** ODBD'14, CSND'14, ODDS'17, Smart Beirut'18, ODT'19, ODAI'24
 - FYP supervisor, (2013 to present), **Record:** over 300 defended projects
 - **At the level of the Antonine University (UA)**
 - Member of the editorial committee for the scientific journal “*Pertinence*”, (2024 to present)
 - Member of the academic committee (CAd), (2022 to present)

- Member of the curricular committee within the University, (2017-2018, 2020 to present)
- Member of the quality assurance committee within the University (AQUA), (2018 to 2022)
- Branch coordinator and member of the council, UA-Mejdelaya, North branch, (2016-2017)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- **Senior Member** of the Institute of Electrical and Electronics Engineers (IEEE) | **ID:** #93079794
- Member of IEEE ComSoc Lebanon Chapter Committee (responsible for industrial collaborations)
- Member in the Order of Engineers and Architects of Beirut (OEA) | **ID:** #35391
- Member of the International Society of Geron-technology (ISG)
- Member of the American Society for Engineering Education (ASEE)
- Member of the Healthcare Knowledge & Innovation Communities (KICs) under **Lebanon Innovate**

AWARDS & CERTIFICATIONS

- **Awards**
 - Best Supervisor-Student Innovative Development FYP, MUREX Awards, (June 2022)
- **Certifications**
 - Certificate of participation in the workshop “*Incubation Mentorship*” as part of the project SAFIR
 - Certificate of participation in the BCI & Neuro-technology spring school 2022 organized by **g.tech** Medical Engineering (Online), (April 25 until May 4, 2022)
 - Certificate of accomplishment of the workshop “STEM education”, New York University of Abu Dhabi, (October 2020) – **Funded by the US embassy in Abu Dhabi**
 - Certificate of accomplishment of the MOOC “*Machine Learning Foundations: A case Study Approach*”, University of Washington, (September 2016).
 - Certificates of attendance to courses, “*LabVIEW core 1 and 2, Data Acquisition and Signal Conditioning, Embedded Control and Monitoring*”, National Instruments, (August 2015).
 - Certificate of attendance to the “*e-health and Telemedicine Workshop for Elderly Patients: Technology and Perspectives*”, Lebanese University, Doctoral School of Science and Technology, (May 2015)
 - Certificate of participation in the training “*La pédagogie universitaire numérique et le e-learning*”, Université Libre de Brussels, (January 2015).
 - Certificate of participation in “*Atelier de formation-réflexion sur l'enseignement universitaire*”, University of Lausanne, (July 2014).

To name just a few...

RESEARCH ACTIVITIES

- **National Research Projects:**
 - **Project PHC-CEDRE 2019:** Modeling and Analysis of Human Gait to Determine the Risk of Falls in the Elderly. (**Completed**)
 - *In collaboration with UCH of Strasbourg, France and Sacré-Coeur Hospital, Lebanon*
 - **Project PHC-CEDRE 2026:** Personalized modeling and analysis of sleep activities for the prediction of nocturnal falls. (**Submitted**)
 - *In collaboration with UCH of Strasbourg, France and Sacré-Coeur Hospital, Lebanon*
 - **Project ALISON:** Evaluation of the Quality of Analgesia and the Depth of Sedation in Intensive Care Patients using Artificial Intelligence. (**In Progress**)
 - *In collaboration with UCH of Besançon, France*
 - **Project ALISON++:** A Medical Device for the Optimization and Personalization of Sedation and Analgesia of the Intensive Care Patient. (**Accepted**)
 - *In collaboration with UCH of Besançon, France*
- **Internal Research Projects: RASMI-UA internal funds**
 - **Project RASMI 1:** PressMat: A Mattress with Air Pressure Sensors for Sleep Activity Monitoring
 - **Project RASMI 2:** Development of a mathematical model for assessing fall risk in elderly individuals
 - **Project RASMI 3:** Development of an Optical Non-Invasive Sensor for Dry Eye Disease Detection
 - **Project RASMI 4:** Mathematical Development of a Simple Balance Index for Elderly Fall Risk Assessment
 - **Project RASMI 5:** Assessing Lebanese Patients' Acceptance of Robotic and AI-Assisted Surgery: Trust and Technological Integration in Healthcare

- **PhD Co-supervision:**

- **PhD Thesis 1:** “Analysis and Modeling of the Gait of the Elderly Subject for Evaluation and Prediction of the Risk of Falling”
 - *Forced suspension, Cause: Student unethical behavior*
- **PhD Thesis 2:** “Classification of Sleep Disorders Using Personalized Computer Modeling for the Prevention of Nocturnal Falls”
 - *Defended on November 13, 2024*
- **PhD Thesis 3:** “Exploiting and Optimizing Hardware Architectures on FPGA to Reduce Time Sampling Uncertainties in Industrial Digital Oscilloscopes”
 - *Defended on November 19, 2024*
- **PhD Thesis 4:** “Development and Evaluation of EEG-based Imagined Speech Decoding techniques for brain-to-text communication”
 - *Under going*
- **PhD Thesis 5:** “Multi-Modal Modeling and Analysis of Postural Control for Identification and Assessment of Balance Disorders”
 - *Under registration*

- **PhD Jury (External Member):**

- **PhD Thesis 1:** “Connected and Intelligent Housing for Home Support: Contribution to the Characterization of the State of Vulnerability of an Elderly Person”
 - *Defended on January 18, 2023*
- **PhD Thesis 2:** “Routing Optimization and Resource Allocation for Home Services and Healthcare Networks”.
 - *Defended on June 10, 2024*

TECHNICAL SKILLS

- **Programming:** VHDL, Verilog, Assembly (PIC+ARM+INTEL), C for microcontrollers, Arduino C
- **Scientific Tools & CADs:** MATLAB, OrCAD, PROTEUS, EAGLE, MultiSIM,
- **Office Tools:** Latex, Microsoft Office Tools
- **IDE:** Arduino, MPLAB, .Net Visual Studio, KEIL

LANGUAGES

- **Native language:** Arabic
- **Foreign languages:**
 - English and French → Very good level (Universal and Professional)
 - Spanish → Beginner
 - Greek → Beginner

List of Publications

International Journals

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|-------------|---|
| 2024 | 1. “BedSense: BedSense: A Bed-Mounted Sensor Node System for Sleep Activities Monitoring and Nocturnal Falls Detection”, Ali Ibrahim, Kabalan Chaccour , Amir Hajjam El Hassani, Mohamed Hajjam El Hassani, Emmanuel Andres, In <i>IEEE on Sensors</i> . |
| | 2. “Compensating Trigger Jitter and Time Interval Error Measurement for Digital Sampling Oscilloscopes with Hardware Design on FPGA”, Bilal Moussa, Kabalan Chaccour, Rachid Bouyekhf, Abdallah Abdallah, Mohamad Mroue, <i>International Journal on Measurement Science and Technology</i> (Under Review) |
| 2023 | 3. “Novel Enhancement Approach Following MVMD and NMF Separation of Complex Snoring Signals”, Mariam Al Mawla, Kabalan Chaccour , Hoda Fares, <i>IEEE Transactions on Biomedical Engineering</i> . |
| | 4. “Compensating Trigger Jitter and Time Interval Error Measurement for Digital Sampling Oscilloscopes with Hardware Design on FPGA”, Bilal Moussa, Kabalan Chaccour , Rachid Bouyekhf, Abdallah Abdallah, Mohamad Mroue, <i>International Journal on Measurement Science and Technology</i> . |
| 2020 | 5. “Bed Fall Detection and Prediction: A Generic Classification and Review of Bed Fall Related Systems”, Ali Ibrahim, Kabalan Chaccour , Amir Hajjam El Hassani, Emmanuel Andres, In <i>IEEE on Sensors</i> , November 16, 2020 |
| 2016 | 6. “From Fall detection to fall prevention: A generic classification of fall related-systems”, Kabalan Chaccour , Rony Darazi, Amir Hajjam, Emmanuel Andres, In <i>IEEE on Sensors</i> , November 11, 2016. |

Book Chapters

- 2023 7. "SleepPal: A Novel System for Elderly Sleep Monitoring and Bed Fall Detection", Ali Ibrahim, **Kabalan Chaccour**, Amir Hajjam El Hassani, Emmanuel Andres, *Information and Communication Technologies for Ageing Well and e-Health published by Springer*

International Conferences

- 2024 8. "Minimizing Sampling Jitter by the Design and Implementation of a Phase-Trigger DSO on FPGA", Bilal Moussa, **Kabalan Chaccour**, Rachid Bouyekhf, Abdallah Abdallah, *6th International Conference on Electronics and Communication, Network and Computer Technology (ECNCT'24)*
- 2023 9. "Enhanced Classification of Snoring Sounds Using Stacked Classifier Models of Machine Learning with SVM-KNN and Deep Learning with RNN-LSTM", Georges El Khoury, **Kabalan Chaccour**, Georges Badr, Amir Hajjam El Hassani, *IEEE International Conference on Bioinformatics and Biomedicine (IEEE BIBM 2023)*
10. "SleepPal: A Sleep Monitoring System for Body Movement and Sleep Posture Detection", Ali Ibrahim, **Kabalan Chaccour**, Amir Hajjam El Hassani, Emmanuel Andres, *ACM 9th International Conference on Informaiton and Communication Technologies for Ageing Well and e-Health (ICT4AWE)*, June 2023.
11. "Design and Implementation of a Data Stream Anonymization Core on FPGA", Bilal Moussa, **Kabalan Chaccour**, Mohamad Mroue, *7th International Conference on Cryptography, Security and Privacy (ICCSP 23)*
12. "Hardware Implementation of the Precision Time Base Technique for Digital Sampling Oscilloscopes" Bilal Moussa, **Kabalan Chaccour**, Rachid Bouyekhf, *25th International Conference on Digital Signal Processing and its Applications (DSPA23)*, May 2023. **(Best Paper Award)**
- 2021 13. "Automated Face Detection and Control System Using Computer Vision based Video Analytics to Avoid the Spreading of COVID-19, Charbel El Gemayel, **Kabalan Chaccour**, Joseph El Gemayel, *4th International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT2021)*, November 4, 2021.
14. "Fall Detection Algorithm using Body Angle for Accurate Classification of Falls and ADLs", Ali Ibrahim, **Kabalan Chaccour**, Amir Hajjam El Hassani, Emmanuel Andres, *IEEE International Conference on e-Health and Bioengineering (EHB2021)*, December 30, 2021
- 2017 15. "Fall Detection Method using Single Axis Acceleration and Angular Velocity", Daniel Badran, **Kabalan Chaccour**, Amir Hajjam El Hassani, Emmanuel Andres, In *9th International Conference on e-health*, July 20-22, 2017.
16. "Design and development of a Force-Sensing shoe for gait analysis and monitoring", **Kabalan Chaccour**, Rony Darazi, Amir Hajjam El Hassani, Emmanuel Andres, In *4th International Conference on Advances in Biomedical Engineering (ICABME'17)*, October 17-19, 2017.
- 2016 17. "Computer vision guidance system for indoor navigation of visually impaired people", **Kabalan Chaccour**, Georges Badr, In *8th IEEE International Conference on Intelligent Systems (IS'16)*, September 04-06, 2016.
18. "Intelligent Software Simulation of Water Consumption in Domestic Homes", Rita Zaher, **Kabalan Chaccour**, Georges Badr, In *18th IEEE International Conference on Computer Modelling and Simulation (UKSim2016)*, 06-08 April 2016.
19. "MobiCentraList: software keyboard with predictive list for mobile device", Georges Badr, Antoine Ghorra, **Kabalan Chaccour**, In *18th International Conference on Human-Computer Interaction (HCII 2016)*, July 17-22, 2016.
20. "Sway Analysis and Fall Prediction Method based on Spatio-Temporal Sliding Window Technique", **Kabalan Chaccour**, Hiba Assaad, Rony Darazi, Amir Hajjam El Hassani, Emmanuel Andres, In *18th International Conference on e-Health Networking, Applications and Service (HEALTHCOM)*, September 14-17, 2016.
- 2015 21. "Smart Carpet using piezoresistive differential pressure sensors for elderly fall detection", **Kabalan Chaccour**, Rony Darazi, Amir Hajjam El Hassani, Emmanuel Anbres, In *11th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMOB), e-Health Pervasive Wireless Applications and Services (eHPWAS)*, October 19-21, 2015.
22. "Novel indoor navigation system for Visually Impaired and blind people", **Kabalan Chaccour**, Georges Badr, In *International Conference on Applied Research in Computer Science and Engineering (ICAR'15)*, October 08-09, 2015,
23. "Multi-sensory guided walker for guidance of visually impaired elderly people", **Kabalan Chaccour**, Rony Darazi, Amir Hajjam El Hassani, Emmanuel Andres, In *3rd International Conference on Advances in Biomedical Engineering (ICABME'15)*, September 16-18, 2015.
24. "Power Generation and Cogeneration Management Algorithm with Renewable Energy Integration", Joseph Al Asmar, Raed Kouta, **Kabalan Chaccour**, Joseph El Assaad, Salah Laghrouche, Elie Eid, In *International Conference on Technologies and Materials for Renewable Energy, Environment and Sustainability (TMREES'15)*, August, 2015
- 2014 25. "Foot pressure distribution modeling for top athletes", **Kabalan Chaccour**, Elie Khoury, Rony Darazi, In *21st Lebanese Association for Advancement in Science (LAAS'21)*, April 2015.
26. "Exploratory study of the evolution of microprocessors through a performance perspective", Chady Abou Jaoude, **Kabalan Chaccour**, In *Pertinence review (Antonine University Editions)*, December 2014.

