KABALAN TOUFIC CHACCOUR
Male, September 4, 1981, Lebanese

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EDUCATION   Qualified Associate Professor (France 2019)

- **PhD in Engineering Sciences (Computer Engineering, Automation and Signal Processing), CNU**
  Section: 61**, 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
PhD Supervisor :	Dr. Amir Hajjam El Hassani - *University of Technology Belfort Montbéliard, France*
PhD 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, Hadat-Baabda, Lebanon, July 2005
- **French and Lebanese Baccalaureates (Concentration:** Mathematics**)**
  Collège des Frères-Mont La Salle, Ain Saade, Lebanon, June 1999

ACADEMIC EXPERIENCE

- **Antonine University (UA), Dept. of CCE., Faculty of Eng., Hadat-Baabda, Lebanon (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., Hadat-Baabda, Lebanon (Part-Time)**
  - Lecturer, (2010 to 2013)

Subject (Lecture+ Lab)[3]	Major[1]	Total hours
Computer architecture (ARM7) (Lecture + Lab)	CC	893
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	202
Digital Image Processing (lecture + Lab)	TN	462
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 2023-2024)		**4530h**

[1]**CC:** Common Core | **TN:** Telecommunications and Networks | **SN:** Systems and Networks
[2]Interim Assistant Professor in the Masters IoT at Université Franche-Comté (UFC)
[3]All 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 balance 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.

Scholar profile: https://scholar.google.com/citations?hl=en&user=tw07GH0AAAAJ

H-index: 7 | **Citations:** 454
- Technical Program Committee (TPC) in many conferences (i.e., IEEE ICAR, IEEE MENACOMM)
- Steering Committee in the conference CATMIA (https://catmia.newel.net/)
- Associate researcher at SINERGIES Lab., Besançon, France
- Associate researcher at TICKET Lab., Antonine University, Hadat-Baabda, Lebanon
- Peer reviewer in reputable journals (IEEE Sensors, IEEE Access)

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**
    - 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 University**
    - Member of the editorial committee for the scientific journal *"Pertinence",* (2024 to present)
    - Member of the academic committee within the University, (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 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)

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 Bruxels, (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

- **Research Grants:**
    - **Project PHC-CEDRE:** 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 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*
    - **Project GRP 1:** Design and Implementation of an IoT Bed for Sleep Disorders Assessment and Nocturnal Activities Monitoring Including Falls. *(**Submitted for Review**)*
        - *In collaboration with Sacré-Coeur Hospital, Lebanon*
    - **Project GRP 2:** Development of AI-Driven Burn Injury Management platform. *(**Submitted for Review**)*
        - *In collaboration with Geitawi Hospital-Center of Burns*

- **PhD 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:** "Implementation and Evaluation of a Postural Education Program in Schools in Lebanon"
    - *Registration in progress*

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

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 *IEEE on Sensors.*

2. "Compensatiing Trigger Jitter and Time Interval Error Measurement for Digital Sampling Oscilloscopeswith Hardware Design on FPGA", Bilal Moussa, Kabalan Chaccour, Rachid Bouyekhf, Abdallah Abdallah, Mohamad Mroue, *International Journal on Measurement Science and Technology* (**Under Review**)

2023 3. "Novel Enhancement Approach Following MVMD and NMF Separation of Complex Snoring Signals", Mariam Al Mawla, **Kabalan Chaccour**, Hoda Fares, *IEEE Transactions on Biomedical Engineering.*

4. "Compensating Trigger Jitter and Time Interval Error Measurement for Digital Sampling Oscilloscopes with Hardware Desgin on FPGA", Bilal Moussa, **Kabalan Chaccour**, Rachid Bouyekhf, Abdallah Abdallah, Mohamad Mroue, *International Journal on Measurement Science and Technology*.

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 *IEEE on Sensors*, 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 *IEEE on Sensors*, 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.