

## Education

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- Harvard Medical School (HMS), USA** 2017  
Master's Thesis in Progress: "Detection of Deep Interictal Epileptiform Discharges from scalp EEG"
- École Polytechnique Fédérale de Lausanne (EPFL), Switzerland** 2015 - 2017 (expected)  
Master's of Science (MSc.) in Bioengineering  
GPA: 5.65/6.0
- American University of Beirut (AUB), Lebanon** 2011 - 2015  
Bachelor of Engineering (BEng.) in Electrical and Computer Engineering  
Minors in Biomedical Engineering and Mathematics  
GPA: 3.91/4.0, graduated with distinction.
- Collège des Frères Maristes Champville, Lebanon** 1997 - 2011  
French Baccalaureate - Mathematics, GPA: 17.6/20.0 (ranked 1st)  
Lebanese Baccalaureate - General Sciences, GPA: 16.0/20.0

## Experience

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- Massachusetts General Hospital | Boston, USA** Feb 2017 - Present
- **Cashlab - The Cortical Physiology Lab, Research Fellow**
    - Working on the correlation of intracranial EEG with scalp EEG for the detection of deep Interictal Epileptiform Discharges.
    - Lead on the testing of PEDOT microelectrodes in intraoperative monitoring. Responsibilities include setting up the recording system in the Operating Room and post-surgery analysis of the recordings.
- CardioDiagnostics SAL | Dbayeh, Lebanon** Oct 2016 - Jan 2017
- **Research and Development Team, Biomedical Engineering Intern**
    - Developing an algorithm for the detection of Atrial Fibrillation from an Electrocardiogram recording and implementing it in an Android application for real-time monitoring.
- Leman Micro Devices SA (LMD) | Lausanne, Switzerland** Jul - Sep 2016
- **Software and Algorithmic Development, Summer Intern**
    - Studied the potential applications of combining the Electrocardiogram (ECG), Seismocardiogram (SCG), and Photoplethysmogram (PPG) measured simultaneously from a smartphone's accelerometers and LMD's oximeter.
    - Developed an Android application and a Matlab software for the gathering and analysis of the ECG, SCG, and PPG.
- École Polytechnique fédérale de Lausanne (EPFL) | Lausanne, Switzerland** Feb - Jun 2016
- **Microsystems Laboratory (LMIS4), Lab Immersion**
    - Developed a wearable sensor and a connected platform for the measurement of core body temperature and the monitoring of flu epidemics.
- Commonwealth Scientific and Industrial Research Organisation (CSIRO) | Brisbane, Australia** May - Aug 2014
- **CSIRO Computational Informatics, Industrial Trainee**
    - Analyzed a Twitter dataset with more than six million geotagged tweets posted in Australia to assess the reliability of Twitter as a proxy for studying human mobility patterns.
- American University of Beirut | Beirut, Lebanon**
- **Computational Linguistics and Information Extraction Lab, Research Assistant** Jan - Apr 2014
    - Worked on the extraction and analysis of information contained in Electronic Medical Records (EMRs).
    - Built an Automatic USMLE exam taker based on the information extracted from the EMRs.
  - **Electrical and Computer Engineering Department, Teaching Assistant**
    - Course: Signals and Systems (EECE 340) Jan - Apr 2014
      - Corrected bi-weekly problem sets for students
    - Course: Introduction to Programming (EECE 230) Jan - Apr 2013
      - Gave weekly problem solving sessions for students, corrected class assignments and quizzes.

## Publications

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- R. Jurdak, K. Zhao, J. Liu, **M. AbouJaoude**, M. Cameron, D. Newth, "Understanding Human Mobility from Twitter," **PLOS ONE**, 10(7): e0131469. doi:10.1371/journal.pone.0131469. July, 2015.
- **M. AbouJaoude**, S. Bekhazi, J. Saade, "AUB Mobile: An Intelligent Campus Navigation Solution," In proceedings of the 14th Faculty of Engineering and Architecture Student and Alumni Conference (**FEASAC**), Beirut, Lebanon, April, 2015.
- **M. AbouJaoude**, A. Dorier, C. Elliott, "An investigation of simultaneous PPG, ECG, SCG and pressure measurements using a Smartphone Vital Signs System" - In Preparation

## Awards

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- **Bertarelli Fellowship** awarded by the Bertarelli Foundation to carry my Master's thesis at **Harvard Medical School**.
- **Dean's Honor List** awarded during all the semesters spent at the American University of Beirut
- **Fouad Chehab Award** for outstanding Lebanese students at the Baccalaureate level for the year 2010-2011

## Skills

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- **Computer Skills:** C++, Java, Python, MATLAB, L<sup>A</sup>T<sub>E</sub>X, Android Development, Arduino, php, MySQL, labVIEW, VHDL, PSpice, Unity3D.
- **Language Skills** Fluent in English, French, and Arabic (read, written and spoken).

## Selected Software and Biomedical Engineering Projects

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- **AUB Mobile:** Developed an **Android** application for navigation throughout the AUB campus, featuring a 2.5D graphical map, live-tracking of the AUB shuttle bus through GPS, and real-time monitoring of the environment.
- **The Great Escape:** Developed a cops-and-robbers game from scratch using **C++** and **Qt** GUI tools.
- **Hangman:** Programmed a PIC16F84 chip to run a Hangman game using **PIC Assembly Language**.
- **HTTP Web Server and Client:** Designed and Implemented an HTTP multithreaded web server and client using **Java**.
- **Processor Simulation:** Implemented and simulated a superscalar out-of-order processor using **VHDL**.
- **Signal and Image Processing Projects**
  - Automatic ECG Arrhythmia detector
  - Automated Process for stenosis detection in X-rays
  - Linear Prediction of Speech and automated pitch detection
  - Processing and Analysis of auditory evoked potential
  - Portable real-time ECG visualizer on Windows and Android devices
- **Data Analysis Projects**
  - EEG-based BCI for the decoding of motor intention and control of a hand exoskeleton
  - Automatic classifier for detecting heart abnormalities using SPECT data
  - Mapping of brain activity to arm position in Brain-Computer Interfaces.
  - Extraction and analysis of gait parameters from kinematic, kinetic and muscular measurements.
  - Topic Modeling on 200 years of Swiss Newspapers

## Interests and Activities

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- Music - Playing, Arranging and Composing for the Piano
- Sports - Basketball and Swimming
- Former Workshop Leader at AUBPlus - the Tech Club
- Delegate of the Champville Alumni Executive Committee at AUB