

# Ilige HAGE

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## Ph.D. in Mechanical Engineering

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### TRAINING/QUALIFICATIONS

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- 2011 – present**      **PhD student.**  
American University Of Beirut (AUB)-Faculty of engineering and architecture (FEA)-Mechanical department- Lebanon.
- 2006 – 2011**      **Mechanical engineering degree.**  
Lebanese University Faculty Of Engineering (ULFG)-Section 2- Lebanon.  
**Master 2: Master SMA-Design and simulation of complex products and systems-metal assemblies and complex composite-EMC2.**  
Ecole centrale de Nantes (ECN) – France.
- 2005 - 2006**      **Lebanese Baccalaureate science (General sciences), Grade: Very Good.**  
College of the holy family - Rayak, Lebanon.

### SKILLS

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- Computer**      Windows, Microsoft Office, Matlab, C, C++, Mechanical desktop, Auto CAD, Pro engineer, Abacus, forge, deform, stream (Olympus microscope), Ansys, simpleware, Vega SEM tescan, Inca (EDX), ZEN (LSM 710).
- Other**      Image processing, automated pattern identification, pathology processing, microscopy (optical, scanning electron), machining, finite element, tissue engineering, biomechanics, continuous thermodynamics, metallurgy, polymer, digital mockup and manufacturing processes, simulation, fatigue and fracture, plasticity, thermodynamics, fluid mechanics, heat transfer, automatic modeling, calculating machines, turbo machines, engines, vibration, electrical machinery, etc.

## PROFESSIONAL EXPERIENCE

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### Projects :

- 1-Pathology preparation for bone samples to be used for optical microscope analysis and scanning electron microscope (SEM) analysis.
- 2-Acquisition of bone sample images through optical microscope. Acquired images were automatically fed to a Matlab code for image processing and pattern identification.
- 3-Acquisition of bones sample images through SEM and BSE, in addition chemical analysis through XRD.
- 4-Acquisition of bones sample images through Laser confocal microscope.
- 5-Modeling of milling process and validation of model against experimental results.
- 6-Incubator for premature infants: control of thermal performance.
- 7-Sensor and electronics : making a program whose goal is the following :
  - control a sensor sensible to movements.
  - Automatically open the door of a car when a car catches the light from a laser transmitter.
  - Increment the counter when you stop light to count the number of cars.
- 8- Industrial chemistry : : A study on the extraction of carbon dioxide from the atmosphere in order to make fuel for this and limit the consumption of fuel will be present in a state of exhaustion in the coming decades. (Reference: "SCIENCE AND LIFE").
- 9- Air conditioning :
  - The calculation load of a villa (ASHRAE).
  - The calculation of charges for all rooms of the villa.
  - The selection of equipment to cool all the rooms (or the system CHILLER AIR HANDLING UNIT).
- 10- Refrigeration: design of a refrigerator of apple, fish and avocado.

### Training :

- Fall- 2011-present    **Optical microscopy operation** at the materials and manufacturing lab AUB.  
**Scanning electron microscopy operation** at the CRSL lab AUB.  
**Laser sonfocal microscopy operation** at the faculty of medicine AUB.  
**Bone sample preparation** pathology lab AUBMC.  
SEM and BSE, in addition chemical analysis through XRD.
- March-July 2011        **Modeling for carbon nano-tubes in composites materials**  
Institut de recherche en genie civile et mecanique (GEM)/ Ecole centrale de nantes (ECN) in collaboration with the polymers group at cambridge university (UK)
- July 2010        **Bassoul-Heneine sal** (BMW and RENAULT exclusive importer),  
Sed El Bouchrieh, Beyrouth, Liban.
  - Title: Apprenticeship mechanical engineer.

- Topic: mechanical repairs of cars such as: Renault, BMW, Mini Cooper et Alpha Romeo.

August -September 2009 **Dar Al-Handasah Consultants** (Shair and Partners), Beyrouth, Liban.

- Title: Apprenticeship mechanical engineer.
- Topic: "Air Conditioning Installation."
- Software: HAP (hourly analysis program), ductulater.
- Generating drawings for HVAC Fire Fighting and Plumbing systems as well as calculations.

## Other :

Fall 2011-2013 Graduate Assistant at AUB.

Summer 2005 - 2009 Private Lessons in Mathematics and Physics.

## PUBLICATIONS

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Structural micro processing of haversian systems of a cortical bovine femur using optical microscope and matlab. (Proceedings of the 2012 ASME International Mechanical Engineering Congress & Exposition, IMECE2012, November 9-15, 2012, Houston, Texas)

## SCHOLARSHIPS & AWARDS

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- 1- Bourse d'accueil des étudiants étrangers en double diplôme par le conseil régional des Pays de la Loire.
- 2- CNRS-L/AUB, Ph.D. awards program.

## LANGUAGES

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**English** (Fluent), **French** (Bilingual), **Arabic** (Native language)

## MISCELLANEOUS

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Piano (Lebanese National Conservatory-Zahle), Music, Reading, Swimming, Basket ball.