



## Education

- **Université de Montréal – École Polytechnique de Montréal** (2015-2019)  
*Ph.D. Degree, Department of Chemical Engineering*
- **Faculty of Engineering – Cairo University** (2010-2013)  
*M.Sc. Degree, Department of Mechanical Engineering*

Thesis: CFD simulation of external distribution of tail-pipe emissions around a stationary vehicle under light tail-wind conditions

## Research Interests

- Physical and numerical modeling of complex fluid flows
- Finite element & Discrete Element Methods
- Computational fluid dynamics
- Processes simulation and optimization
- Simulation and optimization of chemical reactors,
- Combustion and hydrodynamics of chemical reactors
- Internal Combustion Engines
- Energy conversion , conservation and efficiency of industrial processes
- Energy Renewable energy
- Thermodynamics
- Aerodynamics
- Heat transfer

## Work Experience

- **Process Engineering Research Lab and Simulation (PERLS)**, Polytechnique Montréal, QC, Canada      Research Assistant      2015 -
- **Unité de recherche en procédés d'écoulements industriels (URPEI)**, Polytechnique Montréal, QC, Canada      Research Assistant      2015
- **Made in Egypt (MIE) Competition** Cairo, Egypt      Evaluation Committee (Filtration Phase)      2015
- **NASA Space Apps Cairo Competition**, Nile University, Cairo, Egypt      Mentor      2015
- **Egypt Air Maintenance and Engineering**, Basic License of Aeronautical Engineers, Cairo, Egypt      Trainee      2009-2010

# Mohamed Khalil, MSc, Ph.D. Candidate

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- **Faculty of Engineering, Cairo University,** Research Assistant 2011 –  
Cairo, Egypt 2015
- **Institute of Aviation Engineering & Technology (IAET),** Instructor/  
Cairo, Egypt Teaching Assistant 2011 –  
2015
- **Industrial Training Council,** Trainee 2010  
Cairo, Egypt

## Expertise

- Modelling, simulation and finite element method
- Internal Combustion Engines
- Performance and emissions
- Thermodynamics
- Reactive Flows

## Research Background

- Combustion, Fluid mechanics and heat transfer
- Finite element methods for flow and heat transfer problems
- Modeling and simulation of viscous, laminar and turbulent, flows in compressible and incompressible regimes.
- Modeling and simulation of fluid structure interaction problems
- Verification and validation of CFD codes and simulations
- Applications to aerodynamics, heat transfer and flow around flexible structures
- Design of a Solar PV Water Pumping System

## Teaching Experience

- **Internal Combustion Engines** (4<sup>th</sup> year Mechanical Engineering Department) Instructor (2012 – 2015)
- **Energy Conservation in Combustion Systems** (4<sup>th</sup> year Mechanical Engineering Department) Instructor (2011 – 2015)
- **Applied Thermodynamics** (3<sup>rd</sup> year Mechanical Engineering Department) Instructor (2011 – 2012)
- **Fundamentals of Thermodynamics** (1<sup>st</sup> year Mechanical Engineering Department) Instructor (2012 – 2013)
- **Fundamentals of Combustion** (3<sup>rd</sup> year Mechanical Engineering Department) Instructor (2011 – 2013)
- **New & Renewable Energy** (4<sup>th</sup> year Mechanical Engineering Department) Instructor (2011 – 2013)

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- **Material Science** (2<sup>nd</sup> year Mechanical Engineering Department) Instructor (2014)
- **Production Technology** (1<sup>st</sup> year Mechanical Engineering Department) Instructor (2015)
- **Engineering Drawing** (Preparatory year) Teaching Assistant (2011-2013)
- **Machine Drawing** (1<sup>st</sup> year Mechanical Engineering Department) Teaching Assistant (2012)

### Conference Publications

- E. Abo-Serie, M. Sherif, D. Pompei, and A. Gaylard 'CFD simulation of external distribution of tail-pipe emissions around a stationary vehicle under light tail-wind conditions' SAE World Congress, Michigan, Detroit , USA, April 8-10, 2014