Saba **Mansour**

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Education

University of Tehran — *Tehran, Iran*
M.S. in Mechanical Engineering, Energy Conversion — *Sep. 2020- Expected Sep. 2022*
- GPA: 18.69/20.00 (4.00/4.00)

University of Tehran — *Tehran, Iran*
B.S. in Mechanical Engineering — *Sep. 2016- Sep. 2020*
- GPA: 18.02/20.00 (3.79/4.00), Final 2-year GPA: 19.04/20.00 (4.00/4.00)

Research Interests

- Optimization of Energy Systems
- Computational Fluid Dynamics
- Energy Storage and Heat Transfer Applications
- Deep Learning and Neural Networks
- Micro- to Macro- Scale Thermal Management
- Turbulent and Multi-phase Flows
- HVAC and Refrigeration Systems
- Renewable Energy Science and Technology

Research Experiences

(All done at the School of Mechanical Engineering, University of Tehran, Tehran, Iran)

Modelling and optimization of an environmentally benign battery thermal management system for an electric vehicle (EV) using deep learning; under supervision of Dr. Alireza Jalali and Prof. Mehdi Ashjaee (M.Sc. Thesis) — *Multiphase Flow, Heat Transfer and Fluid Mechanics Research Lab, Jan. 2021- Present*

DESCRIPTION (so far):
- Modelled myriads of existing battery thermal management systems (BTMS) with different coolants to study their distinctive superiority over other BTMSs using MATLAB and Python
- Introduced a new hybrid BTMS (including heat pipe, phase change material, and thermo-electric) capable of maintaining the battery pack temperature in its ideal span as the atmospheric temperature changes between -40℃ to 60℃ (-40-140℉)
- Optimized the proposed BTMS characteristics to minimize the power consumption

Performance optimization through designing a novel real-time decision-making energy management strategy for a plug-in hybrid electric vehicle using deep learning under real urban driving conditions; under supervision of Dr. Pouria Ahmadi — *Advanced Energy Systems Lab, Jan. 2021- Present*

DESCRIPTION:
- Recorded 700+ Km real-life driving cycles in Tehran using GPS Tracker and filtered them using MATLAB
- Developed a detailed model of a PHEV drive train in the Amesim software
- Trained a deep neural network (DNN) using Python programming language and TensorFlow library
- Designed a new EMS using DNN and compared its fuel consumption with the existing EMS

Evaluating the impact of drive cycle aggressiveness and environmental factors on energy consumption and different charging strategies on battery degradation in Hybrid Electric Vehicles (HEVs); under supervision of Dr. P. Ahmadi (B.Sc. Thesis) — *Advanced Energy Systems Lab, Sep. 2019- Sep. 2020*

DESCRIPTION:
- Recorded and filtered 20+ driving cycles on specified routes in Tehran using GPS Tracker and MATLAB
- Developed a detailed model of an HEV drive train and battery pack in the Amesim software
- Evaluated the impact of different driving attitudes, road slope, etc. on the vehicle energy consumption
- Evaluated the impact of different charging strategies and ambient temperatures on battery degradation

Selected Course Projects

(All done at the School of Mechanical Engineering, University of Tehran, Tehran, Iran)

Solving the two-dimensional incompressible laminar Navier-Stokes equations for a lid-driven cavity flow using C++ and Tecplot software; under supervision of Dr. A. Jalali — *Computational Fluid Dynamics* — *Jan. 2021- Jun. 2021*

Designing a zero energy building's energy and HVAC systems capable of maintaining the room temperature and humidity within the standards of human comfort using TRNSYS software; under supervision of Dr. P. Ahmadi — *Advanced Energy Systems* — *Jan. 2021- Aug. 2021*

Flow simulation over an asymmetric Jakowski airfoil using ANSYS Fluent and MATLAB software; under supervision of Dr. A. Jalali — *Advanced Fluid Mechanics* — *Sep. 2020- Jan. 2021*

Computation and comparison of Life Cycle Assessment (LCA) of different types of personal vehicles using GREET and GHGenius software; under supervision of Dr. P. Ahmadi — *Renewable Energies* — *Jan. 2020- Aug. 2020*

Stabilization of temperature profile of a cubic object exposed to an air jet using a number of heaters using ANSYS Fluent and MATLAB software; under supervision of Prof. Farshad Kowsari — *Optimization of Mechanical Systems* — *Sep. 2019- Jan. 2020*

Honors & Awards

Full Scholarship, M.S. Program, Exceptional Talents — *Tehran, Iran* — *Sep. 2020*
School of Mechanical Engineering, University of Tehran

Ranked among top 10 of approximately 140 students of the same entry (Named to the Dean's list) — *Tehran, Iran* — *Sep. 2020*
School of Mechanical Engineering, University of Tehran

Full Scholarship, B.S. Program, Iranian University Entrance Exam — *Tehran, Iran* — *Sep. 2016*
School of Mechanical Engineering, University of Tehran

Ranked among the top 0.25% of 164,000+ participants — *Tehran, Iran* — *Jul. 2016*
Iranian National University Entrance Exam (Konkur)- Mathematics and Physics

Certificate of Distinction in Australian Mathematics Competition — *Tehran, Iran* — *Sep. 2015*
Placed in the top 8% of several hundreds of thousands of participants

Selected Courses

Graduate Level

- Computational Fluid Dynamics I (20.00/20)
  Instructor: Dr. A. Jalali
- Advanced Energy Systems (19.15/20)
  Instructor: Dr. P. Ahmadi

Undergraduate Level

- Optimization of Mechanical Systems (19.02/20)
  Instructor: Prof. F. Kowsari
- Heat Transfer II (18.75/20)
  Instructor: Prof. H. Shokouhmand

Teaching Experiences

(All done at the School of Mechanical Engineering, University of Tehran, Tehran, Iran)
Responsibilities: Grading and assigning homework, quizzes, and projects

Teaching Assistant, Advanced Fluid Mechanics, Presented by Dr. A. Jalali — *Sep. 2021- Present*

Teaching Assistant, Fluid Mechanics II, Presented by Dr. A. Jafari — *Sep. 2021- Present*

Teaching Assistant, Heat Transfer I, Presented by Prof. F. Kowsari — *Sep. 2020- Jan. 2021*

Teaching Assistant, Thermodynamics I, Presented by Prof. F. Kowsari — *Jan. 2020- Jul. 2020*

Teaching Assistant, Thermodynamics II, Presented by Dr. P. Ahmadi — *Sep. 2019- Jan. 2020*

Working Experiences

Intern at Advanced Energy Systems Laboratory — *Tehran, Iran*
School of Mechanical Engineering, University of Tehran — *Jun. 2020- Sep. 2020*
- Collected data on conventional, electric, hybrid and fuel cell vehicles
- Compared alternative vehicles and fuels from an economic and environmental point of view

Intern at Sarma Afarin Company — *Tehran, Iran*
Sarma Afarin Company — *Jun. 2019- Sep. 2019*
- Collected and categorized data of available models of fan coil produced by the company
- Developed an algorithm to suggest the best size and type of fan coil based on costumer's need

Publications

Saba Mansour, Mehrdad Raeesi, Sina Changizian, Pouria Ahmadi, "Performance optimization through designing a novel real-time decision-making energy management strategy for a plug-in hybrid electric vehicle using deep learning under real urban driving conditions", Journal of Power Sources *(to be submitted)* — *Tehran, Iran Jan. 2021- Present*

Technical Skills

Programming Languages	MATLAB, Python, C/C++, HTML/CSS
Computer-Aided Design	Solidworks, CATIA
CFD	ANSYS Workbench, COMSOL Multiphysics
Engineering Software	EES, Simcenter Amesim, TRNSYS, GREET, GHGenius, QBlade
Operating Systems	Windows, macOS
Others	Microsoft Office, Tecplot, Photoshop

Languages

English (Professional Working Proficiency)
- IELTS Academic Test: Holding an Overall Band Score of **7.5** — *Aug. 2020*
- GRE General Test: **Quantitative Reasoning: 170**, Total GRE score: 318 — *Nov. 2021*
  Analytical Writing: Not Available until 15/12/2021

Persian/Farsi (Native)

French (Basic knowledge in speaking)

References

Dr. A. Jalali
Assistant Professor of Mechanical Engineering, University of Tehran, Tehran, Iran
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PhD: University of British Columbia

Dr. P. Ahmadi
Assistant Professor of Mechanical Engineering, University of Tehran, Tehran, Iran
Email: pahmadi@ut.ac.ir
Postdoc : University of Illinois at Urbana-Champaign

Prof. F. Kowsari
Professor of Mechanical Engineering, University of Tehran, Tehran, Iran
Email: fkowsari@ut.ac.ir
PhD: Virginia Polytechnic Institute

Prof. M. Ashjaee
Professor of Mechanical Engineering, University of Tehran, Tehran, Iran
Email: ashjaee@ut.ac.ir
PhD: University of Wisconsin-Madison