

# Mohamed Hatem Mousa

1107 W Green St., Urbana, IL 61801 • 217-979-2032 • mousa2@illinois.edu

## Education

---

<b>University of Illinois at Urbana–Champaign</b> <i>Doctor of Philosophy</i> in Mechanical Engineering	Expected: June 2022 GPA: 3.93/4.00
<b>The American University in Cairo</b> <i>Bachelor of Science</i> in Mechanical Engineering, <i>Minor</i> in Business Administration	Completed: May 2018 GPA: 3.98/4.00

## Work Experience

---

<b>University of Illinois at Urbana–Champaign</b> ( <i>in collaboration with Oak Ridge National Lab</i> ) <i>Mechanical Science &amp; Engineering Department, Research Assistant</i>	Aug 2018-Present <i>Urbana, IL</i>
---	---------------------------------------

- Developed & designed a thermal testing setup to measure the thermal transfer efficiency of enhanced metallic surfaces
- Built, & modified the setup to improve its testing capabilities within the planned schedule & budget
- Worked with suppliers, & collaborators to procure the equipment needed to build the setup cost-effectively
- Designed detailed drawings using Solidworks & supervised the manufacturing of parts to the proper specifications
- Troubleshoot & solved startup, technical & instability problems that cause system failure
- Analyzed & tested the heat transfer rate of enhanced metallic surfaces during liquid vapor phase change using the setup
- Reported the progress, problems, solutions, test results, findings, analysis & suggestions to reduce costs
- Mentored & supported graduate students during the design, planning & installation of setups for their projects

<b>Oak Ridge National Laboratory</b> <i>Energy &amp; Transportation Science Division, ASTRO Intern</i>	June 2019-Aug 2019 <i>Oak Ridge, TN</i>
---	--

- Developed layouts & specs for boiler prototypes based on DOE regulations in coordination with engineers & postdocs
- Supervised a team of technicians during work planning & installation of the boiler prototype
- Reported the progress and technical issues to senior management

<b>MARS Wrigley Inc.</b> <i>R&amp;D Department, Intern</i>	July 2017-Aug 2017 <i>Cairo, EGY</i>
---	---

- Analyzed & conducted tests on SKUs to provide statistical insights into undesired oven variabilities
- Identified a new machinery layout within the factory that eliminated E£39,600 in annual expenditures
- Identified & resolved chocolate over tempering problem to improve chocolate fat solidification & crystallization
- Reported & presented to upper management the official Galaxy Flutes specification reports

<b>ABB Ltd.</b> <i>R&amp;D and Industrial Engineering Department, Intern</i>	Jan 2017 <i>Cairo, EGY</i>
---	-------------------------------

- Analyzed & validated component designs on Solidworks to ensure that they can be manufactured within the factory
- Resolved delays in production by innovating a new layout for dies thereby reducing the changeover time
- Communicated and demonstrated need for 5S to workers operating on punching machines

## Leadership

---

### **Egyptian Student Association (ESA)**

*Vice President*

Aug 2020-Present

*Urbana, IL*

- Formulated the association's overall long-term strategies and goals
- Represented the executive board and the association at public events

### **Global Leaders (GLOBE)**

*Group Leader*

Aug 2019-Aug 2021

*Urbana, IL*

- Orchestrated and directed awareness events for students of different cultural backgrounds

### **Graduate Mechanical Society (GraMS)**

*Chief Communications Officer*

Aug 2019-Aug 2020

*Urbana, IL*

- Articulated and moderated communications between the department and the student body
- Promoted and publicized academic workshops to the different engineering departments

### **American University in Cairo Racing Team**

*HR Director*

Aug 2017-Aug 2018

*Cairo, EGY*

- Recruited qualified managers and members for the national formula student competition
- Delegated HR members to other departments to conduct evaluations

## Publications and Conferences

---

- Mousa, M. H.; Yang, C-M.; Nawaz, K; Miljkovic, N. Review of Heat Transfer Enhancement Techniques in Two-Phase Flows for Highly Efficient and Sustainable Cooling. *Renewable & Sustainable Energy Reviews* **2022**, *155*, 111896.
- Mousa, M. H.; Günay, A. A.; Orejon, D.; Khodakarami, S.; Nawaz, K.; Miljkovic, N. Gas-Phase Temperature Mapping of Evaporating Microdroplets. *ACS Applied Materials & Interfaces* **2021**, *13* (13), 15925–15938.
- Mousa, M. H.; Miljkovic, N.; Nawaz, K. Review of Heat Transfer Enhancement Techniques for Single Phase Flows. *Renewable & Sustainable Energy Reviews* **2021**, *137*, 110566.
- Mousa, M. H., A. Alperen Günay, Daniel Orejon, Nenad Miljkovic, "Gas Phase Temperature Mapping of Evaporating Water Microdroplets", ASME International Mechanical Engineering Congress & Exposition, **2019**

## Technical and Linguistic Skills

---

### **Languages:**

Fluent in spoken and written English and Arabic

### **Computer Skills:**

- MS Office
- Ansys Fluent
- CAD (Solidworks, AutoCAD)
- Labview
- Minitab
- MATLAB

### **Lab Equipment:**

- Cleanroom
- SEM
- Micro-goniometer

## Honors

---

**Mechanical Distinguished Fellowship**, University of Illinois at Urbana–Champaign

Aug 2018-Aug 2019

**Shell's Excellence Award School of Sciences & Engineering**, The American University in Cairo

Aug 2018

**Highest Academic Achievers**, The American University in Cairo

Aug 2016-Aug 2018