

Mohamed Hamza Mokhtar ElMessmary, MSc.

Teaching Assistant – Electrical Energy Department

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Summary

Mohamed Hamza is a Teaching Assistant in the Electrical Energy Department at the Arab Academy for Science, Technology and Maritime Transport (AASTMT). He earned his B.Sc. in Electrical Power and Control Engineering from AASTMT in 2018, graduating Excellent with Honor, and completed his M.Sc. in Renewable Energy and Environmental Engineering in May 2024. His master's thesis introduced "A Novel Optimization Algorithm Inspired by Egyptian Stray Dogs for Solving Multi-Objective Optimal Power Flow Problems." His academic and research interests include optimal power flow, renewable energy integration, smart grids, and sustainable energy technologies. Mohamed is actively engaged in teaching undergraduate courses, supervising student projects, and contributing to research that bridges modern power systems with environmental sustainability.

Professional Experience

- (September 2018 – September 2019) Graduate Teaching Assistant in Electrical Power and Control Engineering Department, AAST, Abu Kir Campus, Alexandria, Egypt.
- (September 2019 – September 2024) Graduate teaching assistant in Electrical Energy Engineering Department at Smart Village Campus, Giza, Egypt.
- (September 2024 – Present) Teaching assistant in Electrical Energy Engineering Department at Smart Village Campus, Giza, Egypt.

Academic Positions

- **Teaching Assistant**, Electrical Energy Department
Arab Academy for Science, Technology and Maritime Transport (AASTMT)
2019 – Present
 - Conduct tutorials and laboratory sessions in Electric machines , control systems and renewable energy.
 - Supervise undergraduate projects in electrical engineering and renewable energy.
 - Assist in academic advising.
 - Active member of academic committees, including:
 - **Schedules Committee** – organizing and coordinating course timetables.
 - **Exams Committee** – preparing, invigilating, and grading exams.
 - **ABET & Quality Committee** – ensuring compliance with accreditation standards and quality assurance processes.
 - **Curriculum Development Committee** – contributing to the design and continuous improvement of electrical and energy engineering programs.

Education

- **M.Sc. in Renewable Energy and Environmental Engineering**
Arab Academy for Science, Technology and Maritime Transport (AASTMT), Egypt – May 2024
GPA: **3.7/4.0 (Excellent)**
Thesis: “A Novel Optimization Algorithm Inspired by Egyptian Stray Dogs for Solving Multi-Objective Optimal Power Flow Problems”

- **B.Sc. in Electrical Power and Control Engineering**
Arab Academy for Science, Technology and Maritime Transport (AASTMT), Egypt – 2018
GPA: **3.95/4.0 (Excellent with Honor, 2nd in Class)**

Professional Development Activities

- Attending Moodle Workshop, Cairo, Egypt, July. 6-7, 2020
- Attending Abet Symposium, online event, April 14-16, 2021
- Attending educational preparation course for graduate teaching assistants & lecturers, 4-8 September 2022
- Attending Fundamentals of Digital Transformation Course(FDTC) , August 2023.

Teaching Experience

- Electrical Machines and Drives
- Control Systems
- Renewable Energy Systems
- Power Electronics
- Electrical Measurements & Instrumentation
- Solar Thermal Energy
- Photovoltaic Systems
- Embedded Systems using PIC and ARM Microcontrollers

Research Interests

- Multi-objective Optimal Power Flow (OPF)
- Renewable Energy Integration in Power Systems
- Smart Grids and Distributed Generation
- Optimization Algorithms for Energy Systems
- Environmental Impact of Power Generation
- Electric Vehicle (EV) Integration into Power Grids
- Vehicle-to-Grid (V2G) and Smart Charging Strategies
- Energy Storage Systems (ESS) for Grid Flexibility
- Artificial Intelligence and Machine Learning in Power Systems
- Hydrogen and Hybrid Renewable Systems

Publications (last Five years)

1. ElMessmary, M.H.; Diab, H.Y.; Abdelsalam, M.; Moussa, M.F. A Novel Optimization Algorithm Inspired by Egyptian Stray Dogs for Solving Multi-Objective Optimal Power Flow Problems. *Appl. Syst. Innov.* **2024**, *7*, 122. <https://doi.org/10.3390/asi7060122>
2. Salem, K.M.; Mohamed, M.S.; ElMessmary, M.H.; Ehsan, A.; Elgharib, A.O.; ElShimy, H. Design and Development of Cost-Effective Humanoid Robots for Enhanced Human–Robot Interaction. *Automation* **2025**, *6*, 41. <https://doi.org/10.3390/automation6030041>
3. Elbanna, R., ElMessmary, M.H., Diab, H.Y., & Abdelsalam, M. (2025). A smart hybrid optimization model for DSSE in renewable energy-powered distribution networks. *Renewable Energy And Sustainable Development*, 11(2), 314-334. <https://dx.doi.org/10.21622/resd.2025.11.2.1271>

Technical Skills

- **Software & Tools:** MATLAB/Simulink, ETAP , SAM , HOMER , PV syst
- **Electrical Engineering Skills:** Power system modeling, load flow analysis, control systems, renewable energy integration.
- **Energy Engineering Skills:** Solar PV and wind system design, solar thermal systems, hybrid renewable systems, microgrid optimization, environmental impact assessment of energy projects.

- **General Skills:** technical report writing, MS Office Suite.

Languages

- Arabic: Native
- English: Fluent (TOEFL Certified August 2024)

References:

- **Prof. Hatem Y. Diab**

Head of Elec. Energy Engineering Department ,AASTMT smart village campus

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- **Prof. Mahmoud ElWadie**

Vice Dean of Postgraduate Studies and Scientific Research Department ,AASTMT smart village campus

E-Mail: Mahmoud.elwadie@aast.edu

- **Prof. Mostafa Saad Hamad**

Director of AASTMT Research and Development Center , AASTMT El Alamein Campus

E-Mail: Mostafa.Hamad@aast.edu