# Marwa M. Emam

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https://www.researchgate.net/profile/Marwa-Emam?ev=hdr_xprf

https://scholar.google.com/citations?hl=en&user=urCsba8AAAAJ&view_op=list_works&sortby=pubdate

## Affiliation:

Dr. Marwa Mamdouh Emam,
Lecturer of Artificial Intelligence,
Computer Science Department,
Faculty of Computers &Information,
Minia University, Minia 61519, Egypt.

## Personal Details:

- Nationality: **Egyptian**
- Marital Status: **Married**
- Languages: **Arabic and English**
- Address: **Faculty of Computers &Information, Minia University, Minia 61519, Egypt.**
- Mobile: **+2 01282454836**
- E-mail: marwa.khalef@mu.edu.eg
- Last Job Title: **Lecturer**
- Academic specification**: Artificial Intelligence**

## Academic Accounts

| Metrics | ID | H-index | Publications | Citations |
|---|---|---|---|---|
| **Web of Science** | https://www.webofscience.com/wos/author/record/NCV-8417-2025 | **17** | **38** | **1,409** |
| **Scopus** | **https://www.scopus.com/authid/detail.uri?authorId=57219716093** | **20** | **38** | **1,898** |
| **Google Scholar** | **https://scholar.google.com/citations?hl=en&user=urCsba8AAAAJ&view_op=list_works&sortby=pubdate** | **21** | **41** | **2403** |
| **ResearchGate** | **https://www.researchgate.net/profile/Marwa-Emam** | **21** | **44** | **2232** |
| **ORCID** | **https://orcid.org/0000-0001-7399-6839** | | **31** | |

## Academic Degrees

- **Hold PhD of Artificial Intelligence, October 2021.**
  *PhD Title: "Computer Aided Diagnosis System for Medical Imaging based on Artificial Intelligence".*
- **Lecturer**, Nov 2021.
  Faculty of Computers and Information, Computer Science Dept., Minia University, Minia, Egypt.
- M. Sc. in Computer Science, 2016.
  Faculty of Computers and Artificial Intelligence, Cairo University, Egypt.
- B. Sc. in Computer Science, June 2010.
  Faculty of Computers and Information, Computer Science Dept., Minia University, Minia, Egypt.

## Academic Experience

- **[Nov 2021 – Present], Lecturer of Artificial Intelligence, Computer Science Department, Faculty of Computers and Information, Minia University, Egypt.**
- [October 2016 – Nov 2021], Lecturer Assistant, Computer Science Department, Faculty of Computers and Information, Minia University, Egypt.
- [Sep 2011 – Sep 2016], Teaching Assistant, Computer Science Department, Faculty of Computers and Information, Minia University, Egypt.

## Work Experience and Academic position

- Director, Quality Assurance & Accreditation Unit, [2025 – 2026], Faculty of Computers and Informatics, Minia University, Egypt.
- Director, Quality Assurance & Accreditation Unit, [2024 – 2025], Faculty of Computers and Informatics, Minia University, Egypt.

- Program Coordinator, [August 2025- Present Artificial Intelligence and Data Science Program, Faculty of Computers and Information, Minia University.

## Research Description

### 1- PhD Thesis description:

- 2019 – 2021, PhD degree in the field of "Artificial Intelligence" and it is titled " **Computer Aided Diagnosis System for Medical Imaging based on Artificial Intelligence** ", in Computer Science Department, Faculty of Science, Minia University, Minia, Egypt.

## Publications

### A. Published New Algorithms:

**[1]** Houssein, Essam H., Diego Oliva, Nagwan Abdel Samee, Noha F. Mahmoud, and Marwa M. Emam. "**Liver Cancer Algorithm: A novel bio-inspired optimizer.**" *Computers in Biology and Medicine* (2023): 107389.

### B. Published publications:

### 2026

#### Journal Papers

**[2]** Salhi, A., Ayadi, M., Aldosari, F. M., Algarni, F., Ismail, A., & Emam, M. M. (2026). **Multilevel thresholding segmentation of medical images using the Crested Porcupine Optimizer with Enhanced Solution Quality and Gaussian distribution: Applications to liver, COVID-19, and brain diseases**. *Biomedical Signal Processing and Control*, 113, 108847.

**[3]** Hammad, A., Hosney, M. E., Emam, M. M., Samee, N. A., Alkanhel, R. I., & Houssein, E. H. (2026). **An enhanced educational competition optimizer and feedforward neural networks for automatic seizure detection in EEG signals**. *Biomedical Signal Processing and Control*, 117, 109656.

**[4]** Saad, M. R., Emam, M. M., Hosney, M. E., Samee, N. A., Alkanhel, R. I., & Houssein, E. H. (2026). **Fourier Transform Optimizer: A novel physics-inspired metaheuristic algorithm for optimization problems**. *Knowledge-Based Systems*, 115651.

**[5]** Al Duhayyim, M., Aldawsari, M.A., Ismail, A. Emam, M. M. **Interpretable hybrid ensemble with attention-based fusion and EAOO-GA optimization for lung cancer detection**. *Scientific Reports* 16, 8159 (2026). https://doi.org/10.1038/s41598-026-37187-6

### 2025

#### Journal Papers

**[6]** Emam, M. M., Ibrahim, D. S., Samee, N. A., & Houssein, E. H. (2025). **An Efficient Explainable Deep Learning Model for Multiclass Classification of Gynecological Cancers**. *Knowledge-Based Systems*, 115109.

**[7]** Emam, Marwa M., Hoda Abd El-Sattar, Essam H. Houssein, and Salah Kamel. "**Optimized design and integration of an off-grid solar PV-biomass-battery hybrid energy system using an enhanced educational competition algorithm for cost-effective rural electrification**." *Journal of Energy Storage* 120 (2025): 116381.

**[8]** Emam, M. M., Hosney, M. E., Mostafa, R. R., & Houssein, E. H. (2025**). Multi strategy Horned Lizard Optimization Algorithm for complex optimization and advanced feature selection problems**. *Journal of Big Data*, *12*(1), 148.

**[9]** Emam, M. M., Mostafa, R. R., & Houssein, E. H. (2025). **Computer-aided diagnosis system for predicting liver cancer disease using modified Genghis Khan Shark Optimizer algorithm**. *Expert Systems with Applications*, *285*, 128017.

**[10]** Khurma, R. A., Emam, M. M., Chakraborty, F., Mohamed, S., & Al-Betar, M. A. (2025). **The multi-level image segmentation in dermatology application using an enhance Secretary Bird Optimization Algorithm**. *Scientific Reports*, *15*(1), 38727.

**[11]** Emam, M. M., Saad, M. R., Younan, M., & Houssein, E. H. (2025). **An efficient enhanced exponential distribution optimizer: applications in global, engineering, and combinatorial optimization problems**. *Journal of Big Data*, *12*(1), 90.

**[12]** Houssein, Essam H., Someya Mohsen, Marwa M. Emam, Nagwan Abdel Samee, Reem Ibrahim Alkanhel, and Eman MG Younis. "**Leveraging explainable artificial intelligence for emotional label prediction through health sensor monitoring**." *Cluster Computing* 28, no. 2 (2025): 86.

**[13]** Saad, M. R., Emam, M. M., & Houssein, E. H. (2025). **An efficient multi-objective parrot optimizer for global and engineering optimization problems**. *Scientific Reports*, *15*(1), 5126.

**[14]** Abdel-Salam, M., Houssein, E. H., Emam, M. M., Samee, N. A., & Azam, M. T. (2025). **A novel dynamic Nelder-based Electric Eel Foraging algorithm for global optimization and pathological colorectal cancer image segmentation**. *Computers in Biology and Medicine*, *197*, 110982.

**[15]** Abdel-Salam, M., Houssein, E. H., Emam, M. M., Samee, N. A., Gharehchopogh, F. S., & Bacanin, N. (2025). **EATHOA: Elite-evolved hiking algorithm for global optimization and precise multi-thresholding image segmentation in intracerebral hemorrhage images**. *Computers in Biology and Medicine*, *196*, 110835.

### 2024

#### Journal Papers

**[16]** Houssein, Essam H., Mosa E. Hosney, Marwa M. Emam, Diego Oliva, Eman MG Younis, Abdelmgeid A. Ali, and Waleed M. Mohamed. "**Optimizing feedforward neural networks using a modified weighted mean of vectors: Case study chemical datasets.**" *Swarm and Evolutionary Computation* 89 (2024): 101656.

**[17]** Emam, Marwa M., Essam H. Houssein, Nagwan Abdel Samee, Manal Abdullah Alohali, and Mosa E. Hosney. "**Breast cancer diagnosis using optimized deep convolutional neural network based on transfer learning technique and improved Coati optimization algorithm.**" *Expert Systems with Applications* (2024): 124581.

**[18]** Houssein, Essam H., Marwa M. Emam, Waleed Alomoush, Nagwan Abdel Samee, Mona M. Jamjoom, Rui Zhong, and Krishna Gopal Dhal. "An efficient improved parrot optimizer for bladder cancer classification." *Computers in Biology and Medicine* 181 (2024): 109080.

**[19]** Hosney, Mosa E., Essam H. Houssein, Mohammed R. Saad, Nagwan Abdel Samee, Mona M. Jamjoom, and Marwa M. Emam. "Efficient bladder cancer diagnosis using an improved RIME algorithm with Orthogonal Learning." *Computers in Biology and Medicine* 182 (2024): 109175.

**[20]** Abdel-Salam, Mahmoud, Essam H. Houssein, Marwa M. Emam, Nagwan Abdel Samee, Mona M. Jamjoom, and Gang Hu. "An adaptive enhanced human memory algorithm for multi-level image segmentation for pathological lung cancer images." *Computers in Biology and Medicine* 183 (2024): 109272.

**[21]** Emam, Marwa M., Essam H. Houssein, Nagwan Abdel Samee, Amal K. Alkhalifa, and Mosa E. Hosney. "**Optimizing cancer diagnosis: A hybrid approach of genetic operators and Sinh Cosh Optimizer for tumor identification and feature gene selection**." *Computers in Biology and Medicine* 180 (2024): 108984.

**[22]** Houssein, Essam H., Asmaa Hammad, Marwa M. Emam, and Abdelmgeid A. Ali. "**An enhanced Coati Optimization Algorithm for global optimization and feature selection in EEG emotion recognition**." *Computers in Biology and Medicine* 173 (2024): 108329.

**[23]** Houssein, Essam H., Marwa M. Emam, Narinder Singh, Nagwan Abdel Samee, Maali Alabdulhafith, and Emre Çelik. "**An improved honey badger algorithm for global optimization and multilevel thresholding segmentation: real case with brain tumor images**." *Cluster Computing* (2024): 1-50.

**[24]** Sahoo, Saroj Kumar, Apu Kumar Saha, Essam H. Houssein, M. Premkumar, Salpa Reang, and Marwa M. Emam. "**An arithmetic and geometric mean-based multi-objective moth-flame optimization algorithm.**" *Cluster Computing* (2024): 1-35.

**[25]** Sahoo, Saroj Kumar, M. Premkumar, Apu Kumar Saha, Essam H. Houssein, Saurabh Wanjari, and Marwa M. Emam. "**Multi-objective quasi-reflection learning and weight strategy-based moth flame optimization algorithm**." *Neural Computing and Applications* 36, no. 8 (2024): 4229-4261.

## 2023

### Journal Papers

**[26]** Houssein, Essam H., Mosa E. Hosney, Marwa M. Emam, Eman MG Younis, Abdelmgeid A. Ali, and Waleed M. Mohamed. "**Soft computing techniques for biomedical data analysis: open issues and challenges.**" *Artificial Intelligence Review* (2023): 1-51.

**[27]** Emam, Marwa M., Essam H. Houssein, Mohamed A. Tolba, Magdy M. Zaky, and Mohammed Hamouda Ali. "**Application of modified artificial hummingbird algorithm in optimal power flow and generation capacity in power networks considering renewable energy sources**." *Scientific Reports* 13, no. 1 (2023): 21446.

**[28]** Emam, Marwa M., Nagwan Abdel Samee, Mona M. Jamjoom, and Essam H. Houssein. **"Optimized deep learning architecture for brain tumor classification using improved Hunger Games Search Algorithm."** *Computers in Biology and Medicine* (2023): 106966.

**[29]** Emam, Marwa M., Essam H. Houssein, and Rania M. Ghoniem. **"A modified reptile search algorithm for global optimization and image segmentation: Case study brain MRI images."** *Computers in Biology and Medicine* **(2023): Vol: 152, 106404.**

**[30]** Mafarja, Majdi, Thaer Thaher, Jingwei Too, Hamouda Chantar, Hamza Turabieh, Essam H. Houssein, and Marwa M. Emam. "**An efficient high-dimensional feature selection approach driven by enhanced multi-strategy grey wolf optimizer for biological data classification.**" *Neural Computing and Applications* 35, no. 2 (2023): 1749-1775.

**[31]** Emam, Marwa M., Hoda Abd El-Sattar, Essam H. Houssein, and Salah Kamel. **"Modified orca predation algorithm: developments and perspectives on global optimization and hybrid energy systems."** *Neural Computing and Applications* (2023): 1-23.

**[32]** Sahoo, Saroj Kumar, Essam H. Houssein, M. Premkumar, Apu Kumar Saha, and Marwa M. Emam. "**Self-adaptive moth flame optimizer combined with crossover operator and Fibonacci search strategy for COVID-19 CT image segmentation**." *Expert Systems with Applications* (2023): 120367.

**[33]** Houssein, Essam H., Diego Oliva, Emre Çelik, Marwa M. Emam, and Rania M. Ghoniem. **"Boosted sooty tern optimization algorithm for global optimization and feature selection."** *Expert Systems with Applications* **213 (2022): 119015.**

**[34]** Sabha, M., Thaher, T., & Emam, M. M. (2023). **Cooperative Swarm Intelligence Algorithms for Adaptive Multilevel Thresholding Segmentation of COVID-19 CT-Scan Images**. *Journal of Universal Computer Science (JUCS)*, *29*(7).

## 2022

### Journal Papers

**[35]** **Houssein, Essam H., Doaa A. Abdelkareem, Marwa M. Emam, Mohamed Abdel Hameed, and Mina Younan. "**An efficient image segmentation method for skin cancer imaging using improved golden jackal optimization algorithm.**"** *Computers in Biology and Medicine* **(2022): 106075.**

**[36]** **Houssein, Essam H., Marwa M. Emam, and Abdelmgeid A. Ali. "**Improved manta ray foraging optimization for multi-level thresholding using COVID-19 CT images.**"** *Neural Computing and Applications* **(2022): 1-19.**

**[37]** **Houssein, Essam H., Marwa M. Emam, and Abdelmgeid A. Ali. "**An optimized deep learning architecture for breast cancer diagnosis based on improved marine predators algorithm.**"** *Neural Computing and Applications* **(2022): 1-19.**

## 2021

### Journal Papers

**[38]** **Houssein, Essam H., Marwa M. Emam, and Abdelmgeid A. Ali. "**An efficient multilevel thresholding segmentation method for thermography breast cancer imaging based on improved chimp optimization algorithm.**"** *Expert Systems with Applications* **185 (2021): 115651.**

**[39]** **Houssein, Essam H., Marwa M. Emam, and Abdelmgeid A. Ali. "**Improved manta ray foraging optimization for multi-level thresholding using COVID-19 CT images.**"** *Neural Computing and Applications* **(2021): 1-21.**

**2016**

**Journal Papers**

**[40] Emam, M. M., Aly, A. A., & Omara, F. A. (2016). An improved image steganography method based on LSB technique with random pixel selection. *International Journal of Advanced Computer Science and Applications*, *7*(3).**

**2015**

**[41] Emam, M. M., Aly, A. A., & Omara, F. A. (2015). A modified image steganography method based on lsb technique. *International Journal of Computer Applications*, *125*(5).**

## Thesis Supervision:

**PhD Degree Present**

[1] Ibrahim Elsayed Ibrahim, PhD title "Improving the Efficiency of Wireless Sensor Networks based on Soft Computing Techniques", Faculty of Computers and Information, Minia University, Supervision Committee: Prof. Dr. Essam Halim Houssein, Dr. Marwa Mamdouh Emam, and Dr. Yasser Maher 2023.

[2] Gamela Nageh Zaki Malaik, PhD title "Parameter Estimation for the Components of Hydrogen Energy Systems Using Metaheuristics", Faculty of Computers and Information, Minia University, Supervision Committee: Prof. Dr. Essam Halim Houssein, Dr. Marwa Mamdouh Emam, and Dr. Eman Mamdouh, 2024.

**Master's degree Present**

[1] Yasmin Mouawad Abdelghany, M.Sc. title "Feature Selection based Swarm Intelligence Algorithms for High Dimensional Data Classification", Faculty of Computers and Information, Minia University, Supervision Committee: Prof. Dr. Essam Halim Houssein, and Dr. Marwa Mamdouh Emam, 2023.

**[2]** Doaa, M.Sc. title "Explainable Artificial Intelligence Framework for Early Detection of Gynecological Malignancies ", Faculty of Computers and Information, Minia University, Supervision Committee: Prof. Dr. Essam Halim Houssein, and Dr. M Emam, 2025.

**[3]** Elzahra, M.Sc. title " ", Faculty of Computers and Information, Minia University, Supervision Committee: Prof. Dr. Essam Halim Houssein, and Dr. Marwa Emam, 2025.

## Theses account

| PhD | | MSc | | Total Thesis |
|---|---|---|---|---|
| Done | Present | Done | Present | |
| - | **2** | - | **3** | **5** |

## Teaching Undergraduate Courses

| | | |
|---|---|---|
| Artificial Intelligence | Machine Learning | Data Structures |
| Digital Image Processing | Algorithm Design and Analysis | Object Oriented Programming |
| Simulation and Modelling | Introduction to Information Technology | Neural Networks |
| Research Methods and Skills | Multimedia | Science and Technology |

## Teaching Postgraduate Courses

| |
|---|
| Advanced Algorithm Design and Analysis |
| Information Retrieval |

## Journal Reviewer

| Publishers | Journals |
|---|---|
| Elsevier | 1. Artificial Intelligence in Medicine<br>2. Computers in Biology and Medicine<br>3. Heliyon<br>4. Expert systems with applications<br>5. Applied Soft Computing |

| | |
|---|---|
| | 6. Engineering applications of artificial intelligence |
| Springer | 7. Applied Intelligence<br>8. Artificial Intelligence Review<br>9. Cluster Computing<br>10. Evolutionary Intelligence<br>11. Evolving Systems<br>12. Interdisciplinary Sciences Computational Life Sciences<br>13. Neural Computing and Applications<br>14. Neural Processing Letters<br>15. Soft Computing<br>16. Scientific Reports |
| MDPI | 17. Algorithms,<br>18. Applied Sciences,<br>19. Diagnostics, |

**Bio:**

**Marwa M. Emam** ***received the M.Sc. degrees in Computer Science, in 2016 from the Faculty of Computers and Artificial Intelligence, Cairo University, Egypt. And received the Ph.D. degree in Artificial Intelligence, in 2021. She is currently a Professor Assistant of Artificial Intelligence at the Faculty of Computers and Information, Minia University, Minia, Egypt. Her research interests include Artificial Intelligence, Deep Learning, Machine Learning, Image Processing, Meta-heuristics Optimization Algorithms, and Data Mining. She serves as a reviewer for more journals, such as Elsevier, Springer, and IEEE.***

**Important accounts**

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https://scholar.google.com/citations?hl=en&user=urCsba8AAAAJ&view_op=list_works&sortby=pubdate
Scopus Author ID: 57219716093

Regards,
Dr. Marwa Mamdouh Emam,
Assistant Professor of Artificial Intelligence,
Faculty of Computers & Information, Minia University, El-Minia Governorate, 61519, Egypt.