

# Curriculum Vitae

## Personal Information:

**Title & Name:** Dr. Heba Mahmoud Mohamed Afify

**Current Job:** Acting as Associate professor

**Date of birth:** 21/7/1979

**Place of birth:** Cairo

**E-mail:** hebaaffify@yahoo.com

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## Education Background:

- **B.Sc** degree in Biomedical Engineering & System.  
Graduation Year: 2001  
Faculty of Engineering/Cairo University, Egypt.  
The degree for the B.Sc. project was distinction
- **M.Sc** degree in Biomedical Engineering, Cairo University, Egypt.  
M.Sc. thesis titled, "New Framework for Nonlinear ECG Signals", 2007.  
Preliminary Ph.D. Written Exam for Ph.D. Candidate, May 2009  
Local TOFEL certification, 2009.
- **Ph.D** degree of philosophy in Biomedical Engineering, Cairo University, Egypt.  
Ph.D. thesis titled, "Lossless Differential Compression Algorithm for Genomic Sequence Databases", 2012.
- **Associate professor** of Biomedical Engineering, June 2019.

## Personal Skills:

- Course in Artificial Kidney Machine, Center for Advanced Software & Engineering Consultations, Cairo University, 2003.
- Course in Lab Equipment & Monitors, Center for Advanced Software & Engineering Consultations, Cairo University, 2004.
- Course in CCNA and CCNB, Center for Advanced Software & Engineering Consultations, Cairo University, 2004.
- Course in Microcontroller and Microwaves, Center for Advanced Software & Engineering Consultations, Cairo University, 2005.
- Course in Linux at Center for Advanced Software & Engineering Consultations, Cairo University, 2011.
- Course in Deep learning at programming & Informatics Consultation Center -The Institute of statistical studies and Research, Cairo University, 2018.
- Course in E-Learning at Faculty and Leadership Development Center, Cairo University, 2018.
- Course in International Publishing of Scientific Research at Faculty and Leadership Development Center, Cairo University, 2018.
- Course in Exams and Students Evaluation Systems at Faculty and Leadership Development Center, Cairo University, 2018.

### **Professional Experience:**

1- Working as Clinical Engineer:

As-Salam International Hospital in Egypt (2001-2004)

- Mammography System Installation & Calibration.
- Digital X-Ray Installation & Calibration
- Computer Tomography (C.T) Preventive Maintenance

2- Assistant Lecturer at Thebes Academy (2005-2010)

3- Assistant Lecturer at Cairo Higher Institutes for Engineering, Computer sciences & Management (2010-2012).

4- Lecturer at MTI University (2013-2019).

### **Teaching Experience:**

#### **In Communication Engineering department:**

Teaching and assisting in the delivery of academic education courses for:

<b>Course name</b>	<b>Academic Level</b>
<b>Electronic Measurements</b>	First
<b>Electric Circuits</b>	Frist
<b>Logic Circuits</b>	Second
<b>Electric Machine</b>	Second
<b>Digital Signal Processing</b>	Third
<b>Signal &amp; Systems</b>	Third
<b>Image Processing</b>	Third
<b>Feedback Control Systems</b>	Third
<b>Acoustical Engineering</b>	Third
<b>Computer Aided Design</b>	Third
<b>Instrumentation</b>	Second
<b>Information Systems Modeling</b>	Third
<b>Database management Systems</b>	Second
<b>Pattern recognition</b>	Third

#### **In Biomedical Engineering department:**

Teaching and assisting in the delivery of academic education courses for

<b>Course name</b>	<b>Academic Level</b>
<b>Artificial Organs &amp; Tissue Engineering</b>	Third
<b>Biomechanics System</b>	Third
<b>Clinical Engineering</b>	Third
<b>Bioinformatics</b>	Fourth
<b>CAD of signals and systems</b>	Third
<b>Medical Instrumentation</b>	Fourth
<b>Physiotherapy Equipment</b>	Fourth
<b>Biomedical Engineering</b>	Second
<b>Medical space planning</b>	Fourth
<b>Biochemistry</b>	Second

### **Current research activities:**

- Fields of Interest: Signal processing such as ECG, EMG and Image analysis applications such as MRI, X-ray, Laser, Ultrasound - Bioinformatics Researches.
- Publish my PhD Thesis as book at LAP LAMBERT Academic Publishing, 2013.
- Member of **International journal Computer Science & Information Technology (IJCSIT)**.
- Reviewer Member of **International Journal of Trend in Research and Development (IJTRD)**.
- Editorial Board Member of **International Journal of Bio-Medical Informatics and e-Health (IJBMieH)**.
- Editorial Board and Reviewer Board Member of **International Journal of Engineering Research & Science (IJOER)**.
- Editorial Board of **International Journal on Recent and Innovation Trends in Computing and Communication (IJRITCC)**.
- Reviewer Member of **European Journal of Clinical and Biomedical Sciences, SciencePG (Science publication group)**.
- Editorial Board and Reviewer Member of **International Journal of Bioinformatics and Biomedical Engineering, Public Science Framework, USA**.
- Editorial Board of **American Journal of Information Science and Computer Engineering, Public Science Framework, USA**.
- Associate Editor of **International Journal of Bioinformatics Research, Bioinf Publications**.
- Managing Editor/Reviewer of **International Journal of Computer Application (IJCA), Rs Publication**.
- Editorial Committee of **International Journal of Clinical and Biomedical Research (IJCBR)**.
- Editorial Board-Review Committee of **International Journal of Scientific and Engineering Research (IJSER)**.
- International Advisory Board for **International Journal of Knowledge Discovery in Bioinformatics (IJKDB), IGI Global**.
- Editorial Board Member of **Advances in Science, Technology and Engineering Systems Journal (ASTESJ)**.
- Advisory/Editorial Board of **International Journal of Emerging Technology and Advanced Engineering (IJETAE)**.
- Editorial Board Member of **International Journal of Advanced Trends in Technology, Management & Applied Science (IJATTMAS)**.
- Editorial Board Member of **International Journal of Environment, Agriculture and Biotechnology (IJEAB)**.
- International Advisory Board for the **International Journal of Reliable and Quality E-Healthcare (IJRQEH), IGI Global**.
- International Advisory Board for the **International Journal of Systems Biology and Biomedical Technologies (IJSBBT), IGI Global**.
- Editorial Board Member of **International Journal of Technology, Management and Humanities (IJTMH)**.
- Associate editor for **Journal of Medical Imaging and Health Informatics (JMIHI)**.

- Reviewer for Journal of **Bioinformatics and Computational Biology** (JBCB), World Scientific Publishing Co Pte Ltd.
- Reviewer for IEEE Journal of **Biomedical and Health Informatics** (former IEEE Transactions on Information Technology in Biomedicine).

### *Seminars and Workshops attended:*

- 10 Apr 2012 – 12 Apr 2012: 29th National Radio Science Conference.
- Sep. 2011: How to write publishable paper, Research Seminar Series, AUC.
- March 2010: The 7<sup>th</sup> International Conference on Informatics and Systems, Cairo University.
- Feb.2010: Workshop: Multi-channel Analog-to-Digital (A/D) conversion using a single A/D Converter, Cairo University
- Nov.2009: IEEE International Conference on Image Processing
- Feb.2010: Workshop: Multi-channel Analog-to-Digital (A/D) conversion using a single A/D Converter, Cairo University
- March 2010: The 7<sup>th</sup> International Conference on Informatics and Systems, Cairo University.
- Sep. 2011: How to write publishable paper, Research Seminar Series, AUC.
- Apr 2012: 29<sup>th</sup> National Radio Science Conference (NRSC), Egypt.
- Oct.2016: IEEE 3<sup>th</sup> Middle East Conference on Biomedical Engineering (MECBME), Beirut, Lebanon
- Dec.2016: 8<sup>th</sup> Cairo International Biomedical Engineering Conference (CIBEC 2016), Egypt.
- March 2017: 34<sup>th</sup> National Radio Science Conference (NRSC), Egypt.
- March 2018: IEEE 4<sup>th</sup> Middle East Conference on Biomedical Engineering (MECBME), Tunisia.
- Sep.2018: 4<sup>th</sup> International Conference on Advanced Intelligent Systems and Informatics, Springer, Egypt.
- Nov.2018: 4<sup>th</sup> International Conference on Biomedical & Clinical Engineering in the Arab Countries, Egypt.
- Dec.2018: 13<sup>th</sup> IEEE International Conference on Computer Engineering & System (ICCES), Egypt.
- Dec.2018: 9<sup>th</sup> Cairo International Biomedical Engineering Conference (CIBEC), Egypt.

### *Student & administrative Activities:*

- Organizing the weekly research seminar in MTI University, Bioelectronics Department.
- Supervising the following graduation projects:
  - 1-Classification of EEG / ECG signals, MTI University, Bioelectronics Department, 2015.
  - 2-Biomechanical model of Artificial Hip Joint, MTI University, Bioelectronics Department, 2016.
  - 3-Classification of Breast Cancer Images, MTI University, Bioelectronics Department, 2016.
  - 4-Modeling of Artificial kidney Machine, MTI University, Bioelectronics Department, 2017.
  - 5-Modelling of Anesthetics Machine, MTI University, Bioelectronics Department, 2017.
  - 6-Computer-Aided Diagnostic System for Detection of Epilepsy signals, MTI University, Bioelectronics Department, 2017.
  - 7-Bioinformatics Applications, MTI University, Bioelectronics Department, 2017.
  - 8-Smart Prosthesis Hand, MTI University, Bioelectronics Department, 2018.
  - 9-Biomedical Model for Controlling in Alzheimer's Patient, MTI University, Bioelectronics Department, 2018.
  - 10-Biomechanics of Dental Implant, MTI University, Bioelectronics Department, 2018.

- MSc. Thesis Supervision :

**Title:** An Enhancement – Based Lossless Compression for Mammogram Images using Differential Pulse code Modulation, Cairo University, Faculty of Engineering, Biomedical Engineering & Systems Department, Jan.2019.

**Publications: Journal publications:**

**1- Heba Afify**, Muhammad Islam , Manal Abdel Wahed, “DNA Lossless Differential Compression Algorithm based on Similarity of Genomic sequence database”, International Journal of Computer Science & Information Technology (IJCSIT) vol. 3, no 4, August 2011.

**2- Heba M. Afify**, “Application of Reference-Based Lossless Genome Compression”, International Journal on Recent and Innovation Trends in Computing and Communication (IJRITCC), ISSN: 2321-8169, vol. 3 no. 12, pp: 6503 – 6506, Dec.2015.

**3-Heba M. Afify**, “A Literature Survey on Biosafety and Bioethics: Necessary Regulations in Bioinformatics”, International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE), ISSN: 2277 128X, vo. 5, no. 12, pp: 39-45, Dec. 2015.

**4- Heba M. Afify**, “Applied Biomechanics and Bioinformatics for Analysis of Limb Lengthening Research”, International Journal of Scientific and Engineering Research (IJSER), ISSN 2229-5518, vol. 7, no 2, pp: 620-623,February 2016.

**5- Heba M. Afify**, Basma Ahmed “Computer-Aided Diagnosis of Speech Disorder Signal in Parkinson’s Disease”, International Journal of Computers &Technology, ISSN 2277- 3061, vol. 15, no. 9, pp: 7117-7123, July 2016.

**6- Heba M. Afify**, “Contribution of Clinical Biochemistry to Structural Bioinformatics”, American Journal of Biomedical Sciences, ISSN: 1937-9080, vol. 8, no. 3, pp: 200-207, doi: 10.5099/aj160300200, July 2016.

**7- Mai S. Mabrouk, Samir Y. Marzouk, Heba M. Afify**, “Biomechanical analysis of electric powered wheelchair by reverse engineering modelling technology”, Biomedical Research, vol. 28, no. 8, pp: 3651-3659, January 2017.

**8- Heba M. Afify**, Basma Ahamed, “Mammogram Compression Techniques Using Haar Wavelet and Quadtree Decomposition-Based Image Enhancement”, Biomedical Engineering: Applications, Basis and Communications, World Scientific Publishing, vol. 29, no. 5, pp:1750038(1-7), October 2017.

**9- Reem Kord, Heba Afify, Manal Abdel Wahed**, “Towards Improved Lossless Compression for Mammogram Images using Differential Pulse Code Modulation”, Current Medical Imaging Reviews, Bentham Science Publishers, vol.14, no.6, pp: 969-975, Nov. 2018.

**10- Heba M. Afify**, Mohammed A. Al-Masni,“Taxonomy metagenomic analysis for microbial sequences in three domains system via machine learning approaches”, Informatics in Medicine Unlocked, Published by Elsevier Ltd., vol. 13, pp: 151–157, May 2018.

**11-Mai S. Mabrouk, Samir Y. Marzouk, Heba M. Afify**, “Investigation of Quality Improvement Strategies within Egyptian Dental Clinics”, Biomedical Engineering: Applications, Basis and Communications, World Scientific Publishing, vol. 30, no. 6, pp: 1950006(1-13), 2019.

**12- Mai S. Mabrouk, Heba M. Afify, Samir Y. Marzouk**, “Fully Automated Computer - Aided Diagnosis System for Micro calcifications Cancer based on Improved Mammographic Image Techniques”, Ain Shams Engineering Journal, Elsevier, In press, 2019.

- **Conference papers**

**1-Heba Afify**, Manal A. Wahed, Yasser M. Kadah , “ECG Classification using Affine Invariant Characterization of phase”, The 3<sup>rd</sup> Cairo International Biomedical Engineering conference (CIBEC’06), Egypt, Dec.2006

**2-** Mai S. Mabrouk, Ahmed K. Atwa, **Heba M. Afify**, Manal Abdel Wahed, Nahed H. Solouma, Yasser M. Kadah “Preliminary Investigation on Nonlinear Dynamical Modeling of the biological sequences”, The 3<sup>rd</sup> Cairo International Biomedical Engineering conference (CIBEC’06), Egypt, Dec.2006

**3- H. Afify**, M. Islam, M. Abdel Wahed, Y. M. Kadah, “Genomic sequence Differential Compression Model”, Conference paper in 27th National Radio Science conference (NRSC’2010), Menouf, Egypt, March 2010.

**4-** Reda Abdelbaset, Basma A.Mohamed, **Heba M. Afify**, “A 3-D Biomechanical Model for Enhancing the Performance of Artificial Hand”, 2018 IEEE 4th Middle East Conference on Biomedical Engineering (MECBME), Tunisia, pp: 39-44, 28-30 March 2018.

**5- Heba M. Afify**, Mai S. Mabrouk, Samir Y. Marzouk , “Comparative Biomechanical Analysis of Lumbar Disc Arthroplasty using Finite Element Modeling, 2018 13th International Conference on Computer Engineering and Systems (ICCES), Egypt, pp:85-90,18-19 Dec.2018.

**6- Heba M. Afify**, Basma Ahamed, “Automated classification of Bacterial Images extracted from Digital Microscope via Bag of Words Model”, 2018 9th Cairo International Biomedical Engineering Conference (CIBEC), Egypt, 20-22 Dec.2018.

**7-** Mai S. Mabrouk, Samir Y. Marzouk, **Heba M. Afify** , An Efficient Computer Aided Detection for 3D Neurostructural Reconstruction of Magnetic Resonance Images, 9<sup>th</sup> Cairo International Biomedical Engineering Conference (CIBEC), 20-22 Dec.2018.