

SUMMARY

- Dr Fadhl has a PhD in Bioinformatics from Cairo University. His work was how to extract biological knowledge from available databases using statistical methodology.

**Accomplishment**

1. Professor of Biomedical Engineering
2. Bioinformatics and Computational Biology Researcher
3. Reviewer of some international conferences and highly impact factor journals like Oxford Bioinformatics and JCBBR
4. Yemen INASP Network Coordinator
5. The President of the EWH Yemen chapter
6. The Founder of The First Biomedical Engineering Department in Yemen
7. Biomedical Engineering Consultation and Calibration Center Manager

CONTACT  
INFORMATION

Department of Electronic - Biomedical Engineering Program

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CITIZENSHIP

Yemen

RESEARCH  
INTERESTS

Bioinformatics, Gene Regulatory Network, Biological Network, Molecular Biology, Biotechnology, Nanotechnology, Glucose Insulin Feedback System, System Dynamics, Biomedical Signal Processing

EDUCATION

**Cairo University**, Cairo, Egypt

Ph.D., October 2009 Systems and Biomedical Engineering

- Thesis Topic: *Construction of the Gene Regulatory Network Using Bayesian Network and Biclustering*
- Adviser: Professor Yasser M. Kadah
- Area of Study: Bioinformatics

M.S., Systems and Biomedical Engineering, April 2006

- Thesis Topic: *The Metabolic Endocrine Glucose-Insulin Regulatory System: System Dynamics Approach*
- Adviser: Professor Abdallah Said Ahmed
- Area of Study: Control Engineering

B.S., Systems and Biomedical Engineering, July 2003

- High Good (74%)

- Undergraduate project Grade: Distinction  
 Infusion Pump: The aim of this project is to control the flow of medical fluids to the patient.  
 Hardware and software Implementation using:
  - \* C, VB.
  - \* Matlab.
  - \* Orcad capture and layout.
  - \* Keil S/W.

## AWARDS

### TWAS-ARO Travel Grant

- Selected as a young promising scientists from developing countries to attend Biorobitocs workshop from 13-14 December 2010, Alexandria, Egypt.

### TWAS/BVA.NXT 2010 Travel Grant

- Selected as a young promising scientists from developing countries to participate in TWAS/BioVisionAlexandria.NXT 2010 and BioVisionAlexandria Conference from 10-15 April 2010, Alexandria, Egypt.

### Yemeni Ministry of Higher Education and Scientific Research

- Graduate Research(PhD) Fellowship, 2006
- Graduate Research(Master) Fellowship, 2003
- Undergraduate Scholarship,1998

### Cairo University

- Cairo University award for graduation students 2006

## ACADEMIC EXPERIENCE

### University of Science and Technology, Sana'a, Yemen

#### *Assistant Professor*

**November 2009 to present**

- Supervisor of more than 10 undergraduate projects supported by EWH and NI as:
  - Leakage Current Tester
  - Pulse Ox Phantom
  - Biorobitoics
  - Spectrophotometer
  - Infusion Pump
  - Pulse Oximeter for Heart Rate
  - Computerized Maintenance Management System
  - Defibrilator Tester
  - Universal Surgery Light Bulb Replacement

The progress of these projects be found in [Google Spreadsheet](#)

- Instructor for Medical Equipments I & II(4th Year students)
  - Advisor of more than 20 projects ranging from DNA sequencing To MRI [Google Spreadsheet](#)
- Instructor for Probability and statistics for BME (3th Year students)
- Instructor for Medical Laboratory Instruments (3th Year students)

#### *Assistance Teacher*

**June 2006 to November 2007**

- Instructor for Electronics System (4th Year students)
- Instructor for Introduction to Biomedical Engineering (1th Year students)
- Instructor for Electrical Engineering II (1th Year students)



- Continuous- and Discrete-Time Control Systems (Classical and Modern).
- Electronic Systems (Microprocessor and Microcontroller) with projects:
  - EEPROM Programmer.
  - Digital Filter (Software using Visual C#).
  - Digital Filter (Hardware using Microcontroller).
  - Elevator System.
  - Frequency and Amplitude Detection System.
  - Function Generator plus ECG simulator.
  - Microcontroller-PC handshaking using Serial Communication.
- Bioelectronics with projects:
  - Multi-Patient Temperature Monitor with built-in Camera as a patient observation system.
  - Wireless Voice Communication using Infrared.
- Computer Courses (Artificial Intelligence, Networking, Database, Data Structure, Graphics, Cryptology and security) with projects:
  - Psychological Game (using C).
  - TFTGraphica (Autocad-like program using VBasic).
  - Master Mind Game.
  - Biomedical Consultation and Maintenance Database System.
- Digital Image Processing.
- Advanced Topics in Biomedical Engineering, including Biomechanics, interaction of extremely low frequencies, CCD Camera, Fluorescence Microscopes and Potentiometric Dyes.
- Artificial Heart (Design, Control and Problems).
- Clinical Engineering.
- Electromagnetic field and waves.
- Biostatistics and Stochastic Processes.
- Bioanalysis Equipment.
- Biomedical modeling.
- Electric Machinery Fundamentals.
- Physiology, Anatomy, Biochemistry and others.

**The High Institute of Health Science, Ministry of Health and Population,**  
Sana'a, Yemen

*Assistant Teacher*

**September 2006 to September 2007**

- Instructor for Microprocessor and Assembly Language
- Instructor for Biomedical Electronics
- Consultant for extending the Institute Biomedical Engineering section.

**Regional IT Institute, Cairo, Egypt**

*Assistant Teacher*

**September 2003 to June 2004**

- Trainer MBA students on System dynamics packages like STELLA and VENSIM.

TRAINING AND  
SEMINARS  
ATTENDED

- **2010 Fluke Biomedical Engineering Calibration Laboratory**, Al-Reem Hospico Company L.L.C., Haris Al Afaq, and Tawam Hospital, 18-31 October, Al-Aian, UAE.
- **2009 Biotechnology and Bioinformatics workshop**, Fayuom University, Egypt.
- **2005** Three-day workshop in MRI/CT instrumentation, **CASBEC**, Egypt.
- **2005** One month course in System Dynamics methodology, **RITI**, Cairo, Egypt.
- **2004** One month course in java programming language, **CASBEC**, Egypt

- **2004** Biomedical Engineering Consultation (CASBEC), Egypt. Two-weeks course in hospital management, CASBEC, Egypt.
- **2003** One month training, Siemens Medical Limited , Cairo, Egypt
- **2000** One month course in Microelectronic, CASBEC.
- **2001** One month training, El Kasr el Aini (French Hospital), Cairo, Egypt.

SEMINARS,  
CONFERENCE AND  
MEETING  
ATTENDED

- **February 21-25, 2011 The First Middle East Biomedical Engineering Conference**, American University of Sharjah, Sharjah, United Arab of Emirate.
- **December 12-15, 2010 Birobitocs Workshop**, BA, Alexandria, Egypt.
- **April 10-15, 2010 TWAS/BioVision Alexandria.NXT2010 and BioVision-Alexandria Conference**, BA, Alexandria, Egypt.
- **March 17-19, 2009 26th National Radio Science Conference Cairo**, Future University, Egypt.
- **February 13-16, 2009 First Alexandria international Congress on Tissue Engineering**, Alexandria, Egypt.
- **January 4-6, 2009 First Annual conference on nanotechnology, biotechnology, plant biotechnology, and bioinformatics**, Cairo, Egypt.
- **December 18-20, 2008 Fourth Annual International Conference on Biomedical Engineering**, Cairo, Egypt.
- **September 21-24, 2006 Fourth Annual International Conference on Biomedical Engineering**, Cairo, Egypt.
- **December 24-25, 2002 First Annual Conference on Biomedical Engineering**, Cairo, Egypt

MEMBERS IN THE  
FOLLOWING  
ASSOCIATIONS

- **2009-present** Member of IEEE
- **2009-present** Member of IEEE/Computational Intelligence Society
- **2003-present** Member of International Systems Dynamics Society.
- **2005-present** Member of the Egyptian Diabetic Society.

REVIEWER FOR  
JOURNALS &  
CONFERENCES

- Bioinformatics Journal
- JCBBR
- 2011 4th IEEE International Conference on Computer Science and Information Technology
- 27rd International Conference of the System Dynamics Society, 26-30 July, 2009, Albuquerque, NM, USA. Theme: system dynamics military application.
- 26rd International Conference of the System Dynamics Society, 20-24 July, 2008, Athens, Greece. Theme: modeling complex system.
- 25rd International Conference of the System Dynamics Society, 30-2 August, 2007, Boston, USA. Theme: modeling complex system.
- 24rd International Conference of the System Dynamics Society, 24-27 July, 2006, Nijmegen, the Netherlands. Theme: using system methodology in health development.

PUBLICATIONS

- F. M. Al-Akwaa**, “A New Software to Construct Gene Regulatory Networks From Microarrays Data,” ISESCO Science & Technology Vision Journal, vol. 1, no. 1, pp.24-31,2010.
- F. M. Al-Akwaa**, “Analysis and Visualization of Gene Expression Data Using Biclustering: A Comparative Study, ” African Journal of Biotechnology,2010. **submitted**
- F. M. Al-Akwaa**, K. Wahba, and A. S. Ahmed, “Modeling and Analysis of Glucose-Insulin Oscillatory System,” Bioinformatics and Medical Engineering, vol. 8, no. 1, pp.25-30, 2008.
- F. M. Al-Akwaa**, N. H. Solouma, and Y. M. Kadah, “SSBBN: Gene Regulatory Network Construction using Spectral Subtraction Denoising, Biclustering and Bayesian Network,” BMC Bioinformatics, 2009. **submitted**

BOOKS

- F. M. Al-Akwaa**, *Gene Regulatory Networks Construction*, LAP LAMBERT Academic Publishing, 2010.
- F. M. Al-Akwaa**, *The Dynamic of Glucose-Insulin Endocrine Metabolic Regulatory System: A System Dynamics Approach*, VDM Verlag, 2008.
- F. M. Al-Akwaa**, N. H. Solouma, and Y. M. Kadah, *Gene Regulatory Network: From De-Noising To Validation*, Springer, 2009. **submitted**

CONFERENCE  
PUBLICATIONS

- F. M. Al-Akwaa**, and Y. M. Kadah, “A Novel Micorarray Denoising Algorithm using Spectral Subtraction,” in 1st Middle East Conference on Biomedical Engineering, Sharjah, UAE, 2011. Submitted.
- F. M. Al-Akwaa**, N. H. Solouma, and Y. M. Kadah, “A New Software to Construct Gene Regulatory Networks From Microarrays Data,” in 27th National Radio Science Conference (NRSC) Menofieh University, Cairo, Egypt, 2010.
- F. M. Al-Akwaa**, N. H. Solouma, and Y. M. Kadah, “Performance Comparison of the Structure Learning Bayesian Network Algorithms Using Gene Expression Data,” in 27th National Radio Science Conference (NRSC) Menofieh University, Cairo, Egypt, 2010. **submitted**
- M. A. Al-Olfe, **F. M. Al-Akwa**, W. A. Mohamed, and Y. M. Kadah, “Computer Aided Diagnosis of Digital Mammography Images Using Unsupervised Clustering and Biclustering Techniques,” in SPIE San Diego, California, USA, 2010. **Pdf**
- F. M. Al-Akwaa**, N. H. Solouma, and Y. M. Kadah, “SSBBN: Gene Regulatory Network Construction using Spectral Subtraction Denoising, Biclustering and Bayesian Network,” in The 6th Annual RECOMB Satellite on Regulatory Genomics, the 5th Annual RECOMB Satellite on Systems Biology, and the 4th Annual DREAM reverse engineering challenges., MIT, 2009. **poster Abstract Link**
- F. M. Al-Akwaa**, M. H. Ali, and Y. M. Kadah, “BicAT-Plus: An Automatic Comparative Tool For Bi/Clustering of Gene Expression Data Obtained Using Microarrays,” in 26th National Radio Science Conference (NRSC) Future university, Cairo, Egypt, 2009. **Link**
- F. M. Al-Akwaa** and Y. M. Kadah, “Automatic Gene Ontology Software Tool for Bicluster and Cluster Comparisons,” in IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology TN, USA, 2009. **Link**
- F. M. Al-Akwaa**, K. Wahba, and A. S. A. Mohamed, “Modelling the Glucose Regulatory Feedback System: Understand the Mechanism Underlying Ultradian Oscillations,” in 24th International Conference of the System Dynamics Society, Nijmegen, Netherlands, 2006. **Link**
- F. M. Al-Akwaa**, K. Wahba, and A. S. A. Mohamed, “The Dynamics of Glucose Regulatory System: An Educational Tool for the Students of First Medical Year,” in The 23rd International Conference of the System Dynamics Society, Boston, USA, 2005. **Link**

PROFESSIONAL  
EXPERIENCE

- 2010-Present Fluke Calibration Laboratory Manger, University of the Science & Technology, Yemen.
- 2003-Present Maintenance Engineer, Ministry of Youth and Sports, Sports Health Center, Yemen.
- 2003-2006 Research Assistant, RITI, Cairo, Egypt. Task included research in the field of business dynamics using system dynamics methodology.
- 2003-present Consultant Biomedical Instruments Advisor, The Yemeni High Tender Committee, Ministry of Financial, Yemen.
- 2003-present Consultant Biomedical Instruments Advisor, Social Development Funds, Yemen.
- 2003-2005 Maintenance Engineer, Ministry of Agriculture and Irrigation, General Department for Plant Protection, Yemen.
- 2004-2005 Maintenance Engineer, Cairo University, Center for Advanced Software and Biomedical Consultation (CASBEC), Faculty of Engineering, Egypt.

TECHNICAL SKILLS Extensive hardware and software experience in ,designing, modeling and machine learning

MATLAB experience: linear algebra, Fourier transforms, nonlinear numerical methods, polynomials, statistics, visualization

MATLAB toolboxes: Bioinformatics, control system, filter design, genetic algorithm and direct search, digital signal processing, system identification

Instrumentation and Control: Simulink, LabVIEW and other National Instruments control and data acquisition hardware and software

Hardware: Hardware/Firmware development projects, Biomedical Equipment, Bioelectronics, Control, Measurements, Robotics and Development kits.

Programming: C, C++, Pascal, Perl,SQL, Java,python,VB, and others

Modelling: Model Non-linear complex system using system dynamics packages itthink,Stella, Vensim.

Design Circuit: Electronics programs Like EWB

Applications: T<sub>E</sub>X, L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, Microsoft Office, and other common productivity packages for Windows platform.

Operating Systems: Microsoft Windows XP/2000, Linux, Solaris, and other UNIX variants

Hardware Interface: Parallel Port, Serial Port, USB, Assembly Language and Embedded Systems Programming using Keil sw.

## REFERENCES

- **Prof. Yasser M Kadah**, Professor, Systems and Biomedical Engineering Department, Faculty of Engineering, Cairo University,Egypt, Email:ykm@k-space.org.
- **Prof. Abdalla S.A**, Professor, Systems and Biomedical Dept, Faculty of Engineering, Cairo University, Tel: +2 025703426, Email:profabdo@gmail.com.
- **Emad Rasmy**,Professor, Systems and Biomedical Engineering Department, Faculty of Engineering, Cairo University,Egypt, Email:erasmy@gmail.com.
- **Mohamed Eladway**, Professor, Electronic Department, Faculty of Engineering, Helwan University,Egypt, Email:mohamed@eladawy.com.
- **Prof. Nahed H Solouma**, Associate Professor, NILES, Cairo University, Egypt, Email:nsolouma@k-space.org.
- **Dr. Khaled Wahba**, Assistant Professor, Systems and Biomedical Engineering Department, Faculty of Engineering, Cairo University, Egypt, Email:k.wahba@riti.com. Academic Advisor, Regional IT Institute, Cairo, Egypt, Tel: +2 02 737 6006, Fax: +2 02 739 1380.

## HOBBIES

- Reading ,Chess and Football