

# Dr. Ahmed Moh. El-Bialy

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**Professor:**  
**Systems and Biomedical Engineering**  
**Faculty of Engineering, Cairo University**

## Personal

Date of Birth:	26/10/1957	Work Address:	<b>Systems and Biomedical - Faculty of Eng. Cairo University, Giza, Egypt</b>
Place of Birth	<b>Giza- Egypt</b>	Phone:	<b>+(202) 35703426</b>
Nationality: Current:	<b>Egyptian</b>	Fax:	<b>+(202) 35723486</b>
Home Address:	<b>14 Taher El Gazairy -7<sup>th</sup> zone - Nasr City- Cairo, Egypt</b>	Marital Status:	<b>Married</b>
Phone:	<b>+(202) 22710505</b>	Email:	<b>abialy_86@yahoo.com</b>
Mobile:	<b>+(20100) 1234080</b>		

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<https://www.scopus.com/authid/detail.uri?authorId=6603595236>

## Education

Ph.D. (1990) Systems Engineering, Case Western Reserve University, Cleveland, Ohio.

M.S. (1984) Systems and Biomedical Engineering, Cairo -University.

B.S. (1980) Systems and Biomedical Engineering, Cairo University.

## Employment

**1990 – Present Professor** (Computers, Pattern Recognition, Computer Graphics, and AI) in the Department of Systems and Biomedical Engineering, Cairo University.

**1991 - 1994; Executive Manager of the Multimedia Lab** in the Cairo University Center for Advanced Software Development and Applications

**1994 - 2003 Executive Manager and Consultant, Software IT Engineering,** Engineering Office for Integrated Projects (EOIP).

**1998-1998** Visiting Professor, University of Louisville, Louisville, Kentucky, USA.

**2001-2002** IT consultants for establishing E-Business network for Middle Egypt Electric Distribution Company. The project will connect all of the sectors (MENIA, ASSUIT, BANY SWAIF, EL WADI El GIDEED, and FAYOUM) with the Headquarter.

**2000 Head, Virtual Orthodontic Clinic (VOC) project:** a system that could provide dentists with their patient's information, their Examination, their medical images and the financial management of the clinic. Information system is not only what automation could support dentists with but also it may support them in taking decision about patient's treatment planes.

**2008 – 2011** Executive Manager of the Center of Advanced Software and Biomedical Consultation, in Faculty of Eng. Cairo Univ.

**2011 – 2012** The Head of the Biomedical and System Engineering department at the Shorouk Higher Engineering Institute

**2012 – 2014** The General Manager of the Center of Advanced Software and Biomedical Consultation, in Faculty of Eng. Cairo Univ.

**2014 – 2016** Dean of Cairo Higher Institute for Engineering, Computer Sciences and Management.

**2016 –** Software Consultant at CASBEC Cairo University – Faculty of Eng.

**2019 –**The Head of the Biomedical and System Engineering department at the Shorouk Higher Engineering Institute

## Research Interests

Current research topics include the application of AI and pattern recognition methodologies to images and texture -recognition systems. Augmented Reality is my current research interest. Other research interests include the analysis and control of nonlinear systems and its application to neuro - muscular systems. Finally, the field of Multimedia, Computer Graphics and 3D Animation and their applications in education is of great interest. The area of the automation of the Orthodontic Clinic is of major interests.

## Research and Applied Projects

### 1. Inventions:

- The design and implementation of a CPM (Continuous Passive Motion) machine. An apparatus used after operation as an anti (muscle- tendon) stiffness.
- The design and implementation of a Myo-Electrico -Mechanical arm. The arm contains a micro controller used to open and close a grip (hand), according some the EMG measured signal.
- The design and implementation of the first Egyptian **Digital Relay** used to protect and monitor circuit breakers in the medium tension electric power station.

### 2. Research Grants:

- PI of the **UPPER-LIMB MYOELECTRIC PROSTHESIS PROJECT**. A project funded by the NSF (**U.S.-EGYPT S&T PROGRAM**). Where a below-elbow myoelectric prosthesis was designed and implemented.

### 3. Applied Projects:

- The foundation of Advanced Software Development and Application center in the Cairo university- 1991.
- The Supervision and implementation of the training center in ASDA.
- The Supervision and management of the first multimedia center in Cairo Univ. and in Egypt(1991).
- The establishment of the first 3D-Animation training center and lab in Cairo Univ.
- Joining the team of university professors in the design and implementation of the first Egyptian **Automatic Meter Reading (AMR)** for the Ministry of Electricity-Distribution companies.
- Joining the team of university professors in the design and implementation of the first Egyptian **Digital Relay** for the Ministry of Electricity-Distribution companies
- Joining the team of university professors in the design and implementation of the first Egyptian **SCADA** for monitoring and controlling medium and low tension electrical power systems.
- Joining the team of university professors in the design and implementation of IRIS Recognition System, sponsored by ITIDA

### 4. Curriculum Development:

- The implementation of a system for course generation that has been used to build the complete course system for the commerce program in the Open University Center at the Cairo University.
- Joining the team in the development of the computer technology program in the Open University Center at the Cairo University.
- Course content development of **Introduction to Computer Graphics** for the undergraduate in the Department.
- Course content development of the **Pattern Recognition** for the graduate students in the Department.
- Course content development of the **Nonlinear Control** for the graduate students in the Department.
- Course content development of **Introduction to Computer Architecture** for the first year students in the Department.

- Course content development of **Computer and Data processing** for the fourth year students in the Department.
- Course content development of **Computer Graphics** for the graduate students the Regional Institute for Technology and Information (RITI).

#### 5. Courses Taught:

- Pattern Recognition, in the SBME Dept., Cairo Univ.
- Nonlinear Control, in the SBME Dept., Cairo Univ.
- Computer Architecture, in the SBME Dept., Cairo Univ.
- Computer and Data Processing, in the SBME Dept., Cairo Univ.
- Artificial Intelligence, in the SBME Dept., Cairo Univ.
- Introduction to Computer, in the SBME Dept., Cairo Univ.
- Computer Graphics, in SBME Dept, Cairo Univ.
- Introduction to Computer Graphics, in the Regional Institute for Technology and Information (RITI).
- Digital Signal Processing, UofL, KT, USA.
- Computer Organization, in AAST.
- Artificial Intelligence, in the SBME Dept., Shorouk Academy.
- Computer Graphics in the SBME Dept., Shorouk Academy.
- Computer System Architecture, in the SBME Dept., Shorouk Academy.
- Introduction to Biomedical Instrumentation, AAST.

#### 6. Supervision of theses and dissertations:

- Master Thesis: "3D Cephalometric Analysis", Assem Awad Awed
- Master Thesis: "3D Registration", Ola El Bakery
- Master Thesis "3D Model for Facial Skin ", Mohamed El Molla
- Master Thesis "Image Enhancement for Face and Skull 3D reconstruction", Sagi El Zalabani
- Master Thesis: "Surgical Planning: Orthodontic Application", Lamiaa Nabil Mahdi
- Master Thesis" Remote patient Monitoring System ", Deiaa Ali Abd Al Aziz
- Master Thesis " 3D Surgical Planning for Liver Transplantation", Mohamed Ibrahim Waly
- Master Thesis: " Construction of Suffix Array for Biological Sequences During Decompression ", Mahmoud Mohamed Ismail
- Master Thesis: "Face Scanner", Same El Zalabany
- Master Thesis: "Remote Hospital Information System", Yasmin Sameh
- Master Thesis: "Intelligent Robust Speech Command System", Walaa Mohamed

#### Publications:

- [1] A. El-Bialy "Similarity Measure and End Point Detection of Isolated Arabic Words and Their Application to Speech Recognition," M.S. Thesis, Faculty of Engineering, Cairo University, 1984
- [2] M. Hashish, et al. "Speech Recognition Similarity of Isolated Arabic Words and its Utilization to Assist Handicapped," FRCU project No. 81020, Cairo University, Progress Reports No 1-5, 1982.
- [3] Veltink P., **El-Bialy A.**, Chizeck H. and Crag6 P., 1989 "Nonlinear Control of an Artificially Stimulated Muscle- Skeleton Load System" IEEE Eng. and Medical Biology Conf., Seattle, U.S. A-
- [4] Veltink P., El-Bialy A., Chizeck H. and Crago P., 1989 "Control of Muscle Contraction by Inversion of Discrete Time Model of Muscle Dynamics" , Vienna., 1990
- [5] **A. El-Bialy "Control of Multiplicative Discrete-Time Systems," Ph.D. Thesis, Faculty of Engineering, Case Western Reserve Univ., Cleveland ,OH, USA, 1990**

- [6] Kandil A.H., and El-Bialy A., " Nonlinear Control Problems Subjected to State Constraints; - .Part 1: Single Input Systems," Al Azhar Eng. Second International Conf., 344-355, 1991.
- [7] Kandil A.H., and **El-Bialy A.**, " Nonlinear Control Problems Subjected **to** State Constraints; Part II: Multi Input Systems," Al Azhar Eng. Second International Conf., 356-366, 1991.
- [8] Veltink P., **El-Bialy A.**, Chizeck H. and Crago P., 1992 "Nonlinear Joint Angle Control for Artificially Stimulated Muscle" IEEE Trans. Biomed. Eng., Vol. 39, No 4, April 1992.
- [9] Hashish M. et al. "A Novel Segmentation Technique for Cursive Written Text," Al-Azhar Eng. Fourth International Conf., 1995.
- [10] Hashish M. et al. "Topological Features: Towards an OMNI Arabic Text Reader," Al-Azhar Eng. Fifth International Conf., 1997.
- [11] Sameh M. Yamany and **A. El-Bialy**, "Efficient Free-Form Surface Representation with Application in Orthodontics," 3D Image Capture & Application II, SPIE, vol. 3640, pp. 115-124, Jan 1999.
- [12] Sameh M. Yamany, **Ahmed M. El-Bialy** and Aly A. Farag, "Object Recognition Using Neural Networks and Surface Signatures," International Joint Conference on Neural Networks, IJCNN'99, Washington DC, July, 1999
- [13] **Ahmed M. El-Bialy** , "Object Recognition and Integration using surface signatures and neural networks", Sensor Fusion and Decentralized Control in Robotic System II, SPIE, vol. 3839, pp21-30, Sept 1999.
- [14] Sameh M. Yamany and **Ahmed M. El-Bialy** and Aly A. Farag, "Free-Form Object Recognition and Registration Using Surface Signatures," IEEE Int. Conf. Image Processing ICIP'99, Japan, OCT., Paper No.: 744, Session: 26AP6A, 1999.
- [15] Kandil A. H. and et al. , "Arabic OCR: A Complete System for OMNI-Size Type Setting Text with Novel Omni Segmentation Approach," ICCTA 99, Alex.-Egypt, August 1999.
- [16] Fawzi S. et. al., " Arabic Text to Speech: Towards a Complete System," , ICCTA 99, Alex.-Egypt, August 1999.
- [17] **El-Bialy A.** et al. , "Arabic OCR: A Complete System," Document Recognition and Retrieval VII, SPIE Vol. 3967, pp 42-51, Jan. 2000
- [18] Kandil A. H., et al, " Towards an Massive Course Generation System," IRMA International Conf. , pp 923-295, Alaska, USA, May. 2000
- [19] M. Ghaly et al, " A Novel Microscada System for Middle Egypt Electricity Compay," to Published in the CIRED 2001, in Belgium.
- [20] Kandil A. H., et al, " Towards an Massive Course Generation System," Web-Based Instructional Learning, By Mehdi Khosrow-Pour, IRM Press, Chapt. 23, pp264-274 2002. (requested to be reprinted from the IRMA 2000- paper)
- [21] S. M. ElBasiouny et al, "Proportional Control of Myoelectric Prosthesis," The 4<sup>th</sup> International Workshop on Biosignal Interpretation" Villa Olmo, Como (Italy), June 24-26, 2002.
- [22] **El-Bialy A.**, Kandil A.H.," Virtual Orthodontic Clinic (VOR)", The first International Conference on Clinical Engineering- Egypt: (Safety Hospital Environment), ICCE, Feb 17-19, 2003.
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- [24] Ahmed H. Kandil, **Ahmed El-Bialy**, " ARABIC OCR: A Centerline Independent Segmentation," The 2004 International Conference on Electrical, Electronic and Computer Engineering, ICEEC'04, September 5-7, 2004

- [25] **Ahmed El-Bialy**, Ahmed H. Kandil, "Automatic Orthodontic Clinical System," The 2004 International Conference on Electrical, Electronic and Computer Engineering, ICEEC'04, September 5-7, 2004
- [26] A. A. Saad, A. El-Bialy, A. H. Kandil, A. Sayed Ahmed, "Active Appearance Model and Simulated Annealing for Automatic Cephalometric Analysis ", The 2nd Cairo International Biomedical Engineering Conference, Dec. 2004
- [27] A. A. Saad, **A. El-Bialy**, A. H. Kandil, A. Sayed Ahmed, " Automatic Cephalometric Analysis Using Active Appearance Model and Simulated Annealing ", GVIP Special Issue on Image Retrieval and Representation, pp 47-64, March 2006.
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- [29] **A. El-Bialy**, "Towards a Complete Computer Dental Treatment System", the 4th Cairo International Biomedical Engineering Conference, Dec. 2008.
- [30] M Mahmoud, M. Abouelhoda, A. Kandil, **A. El-Bialy**, "Constructing Suffix Array During Decompression,", the 4th Cairo International Biomedical Engineering Conference, Dec. 2008.
- [31] Amr El-Beialy, Amr El-Ezz, Khaled Attia, Ahmed El-Bialy, Yehya Mostafa "Loss of Anchorage of miniscrews: A 3-dimensional assessment," Am J Orthod Dentofacial Orthop 2009;136:700-7.
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- [33] Asem Othman, Amr El-Beialy, Sahar Fawzy, Ahmed Kandil, **Ahmed El-Bialy**, Yehya Mostafa " Tools for Managing 3D Images," Am J Orthod Dentofacial Orthop 2010;137:266-273.
- [34] **A. El-Bialy**, "Towards a Complete Computer Dental Treatment System", International Journal of Electrical & Computer Sciences IJECS-IJENS Vol: 10 No: 01, P: 77-84,\2010.
- [35] A.H. Kandil , **A.M. El-Bialy** , S. A. Fawzi , M.S. Abdo "Automatic Detection for Some Common Pronunciation Mistakes Applied to Chosen Quran Sounds" Cairo International Biomedical Engineering Conference 2010.
- [36] M. S. Kamel, S. A. Fawzi, **A. M. El-Bialy**, A.H. Kandil "SECURE REMOTE PATIENT MONITORING SYSTEM" AlSharja International conference on Biomedical Engineering, 2011
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