

# C.V.

**Name:** Alaa Mahmoud Hamdy Mohamed Abd El-Kader.

**Date of Birth:** 17 / 8 / 1966.

**Sex:** Male.

**Citizenship:** Egyptian.

**Religion:** Moslem.

**Social Status:** Married.

**Military Service:** Excepted.

**I.D. Number:** 26608172102278.

**Address:** 1 Abdullah Aly St., from Soliman Gohar St., Dokki, Giza, Egypt.

**Postal Number:** 12311.

**Phone Number:** +202-37629448.

**Fax Number:** +202-37629448.

**Mobile Number:** +2012-1089313 (*Available all the time except at the time of the lectures and presentations*).

**E-Mail Address:** [alaa.hamdy@gmail.com](mailto:alaa.hamdy@gmail.com).



## Education:

1. **B.Sc.** in Telecommunications and Electronics from Helwan University in May 1989.

**Grade:** Very Good with Honour Degree.

**Rank:** First.

**Grade of Project:** Excellent.

2. **M.Sc.** in Computer Engineering from Helwan University in **1996**.

**Title of Thesis:** Speaker-Independent Arabic Word Recognition System.

3. **Ph.D.** in Computer Engineering from Poznan University of Technology, Poland in *January 2004*.

**Title of Thesis:** Contribution to the image segmentation methods and machine-vision tracking of multiple objects in image-sequences.

## Graduate Courses Taken:

### M.Sc. Level Courses:

- ✚ Numerical Analysis.
- ✚ Advanced Electronics.
- ✚ Information Theory.
- ✚ Electronic Measurements.
- ✚ Circuits and Systems.
- ✚ Automatic Control.
- ✚ Field Theory.

### Ph.D. Level Courses:

- Image Analysis and Image Processing.
- Artificial Neural Networks (*ANNs*).
- Methodology of Science.
- Telecommunication Networks: Protocols, Modeling, and Analysis.

## Current Job:

- ◆ Tutor in *American University in Cairo (AUC)* (Part time), from September 2007 till now for the following training courses:

- ✚ Supervisory Control and Data Acquisition (*SCADA*), Level I and Level II.
- ✚ Programmable Logic Controllers (*PLC*), Level I and Level II.
- ✚ Distributed Control Systems (*DCS*).

- ◆ Lecturer in *Department of Mechanics, Faculty of Engineering, French University* (Part time), from September 2007 till June 2008. Courses taught in *French University*:

- ✚ Automatic Control.
- ✚ Advanced Control Systems (Fuzzy Systems and Control).
- ✚ Sensors & Actuators.
- ✚ Sequential and Combinatorial Control.

◆ Lecturer in *Faculty of Engineering* as well as *Faculty of Computer Sciences*, *Misr International University (MIU)* (Part time), from January 2005 till now. Semesters: Spring 2005, Summer 2005, Fall 2005, Fall 2006, Spring 2006, Fall 2006, Spring 2007, Summer 2007, Fall 2007, Spring 2008, Summer 2008, Fall 2008, and Spring 2009. I have been chosen as the best lecturer in the faculty. Courses taught in *Misr International University (MIU)*:

- ◆ Image Processing.
- ◆ Microprocessors.
- ◆ Assembly Language Programming.
- ◆ Computer Organization and Architecture.
- ◆ Logic Design.
- ◆ Introduction to Programming & Problem Solving.
- ◆ Computer Programming.
- ◆ Projects.
- ◆ ROBOCON 2009.

◆ Supervisor / advisor in *Arab Academy for Science & Technology (AAST), Cairo* (Part time), from September 2007 till 2008 for the following projects:

- ◆ ROBOCON 2008.
- ◆ ROBOCON 2007.

◆ Lecturer in *Department of Telecommunications, Electronics, and Computers, Faculty of Engineering, Helwan University* (Full time), from February 2004 till now. Teaching assistant (Full time) in the same department from September 1989 till November 1999. Courses taught in *Helwan University*:

- ◆ Field Theory.
- ◆ Electromagnetic Waves Propagation and Antennas.
- ◆ Industrial Electronics and Electronic Circuits.

- ✿ Power Electronics.
- ✿ Computer Vision.
- ✿ Image Processing and Image Understanding.
- ✿ Machine Learning.
- ✿ Artificial Intelligence.
- ✿ Computer Interfacing.
- ✿ Microprocessors and Microcomputers (Programming and Hardware).
- ✿ Data Structure and Algorithms.
- ✿ Computer Languages.
- ✿ Analog Communications (Theory and Systems).
- ✿ Digital Communication Systems.
- ✿ Projects.

◆ Lecturer in *Department of Engineering*, Canadian International College (**CIC**) (Part time), from February 2009 till now. Courses taught in Canadian International College (CIC):

- ✿ Pattern Recognition.
- ✿ Artificial Intelligence.

◆ Lecturer in *Department of Biomedical Engineering, Faculty of Engineering*, Misr University for Science & Technology (**MUST**) (Part time), June 2007. Courses taught in Misr University for Science & Technology (MUST):

- ✿ Artificial Neural Networks (ANNs).
- ✿ Selected Topics (AI, Genetic Algorithms, And Fuzzy Logic).

◆ Lecturer in Department of Computers, *High Institute of Engineering*, Cultural and Sciences City, 6<sup>th</sup> October (Part time), from September 2004 till June 2007. Courses taught in High Institute of Engineering:

- ✿ Image Processing.
- ✿ Computer Graphics.

- ✿ Graph Theory.
- ✿ Data Structure and Algorithms.
- ✿ Projects.

### Teaching Experience:

I have been working since 1989 in teaching of the undergraduate courses as well as postgraduate courses.

Currently, I am a supervisor for the following undergraduate projects:

- 📍 CNC.
- 📍 Smart (intelligent) camera.
- 📍 Home automation.
- 📍 Vision-based industrial inspection.
- 📍 Motion detection for security.
- 📍 **USB 2** interfacing.
- 📍 In-circuit microcontroller/flash programming.
- 📍 Finger print recognition.
- 📍 Voice conversion.

Besides, I have been a tutor for the following training courses:

- 📍 New *UPS technologies*.
- 📍 Microcontrollers and Embedded Systems.
- 📍 Fundamentals and Components of Computer.
- 📍 Windows **XP**.
- 📍 Microsoft Word.
- 📍 Microsoft PowerPoint.
- 📍 Microsoft Excel.
- 📍 Microsoft Access.
- 📍 Microsoft Internet Explorer & Outlook Express.
- 📍 Microsoft FrontPage.

### Computer Training Courses:

1. **FORTTRAN** Language from *Scientific & Statistical Computation Research Center, Cairo University*, from 7 / 8 / 1988 to 14 / 9 / 1988, No. of Hours: 54, Grade: Excellent.
2. **Pascal** Language from *Statistical Researches and Studies Institute, Cairo University*, from 21 / 8 / 1988 to 20 / 9 / 1988, No. of Hours: 50, Grade: Excellent.

### Computer Programming:

C, C++, C++ Builder, Matlab, Prolog, FORTRAN, BASIC, Pascal, Assembly Intel 8080, 8085, 8088, 8086, 80286, 80386, 80486, Pentium family, Motorola 6800, Zilog Z80, 8051 family, and IBM 360/370.

**Computer Maintenance Experience: 3 Years.**

**Computer Network Installation and Maintenance Experience: 1 Year.**

**Electronics, Industrial, Control & Automation Experience:**

Since 1987 till now, I have been working as a designer / developer in the following domains:

- ✚ *Electric power monitoring.*
- ✚ *RFID systems.*
- ✚ *Horizontal & vertical transfer machines.*
- ✚ *Cutting machines.*
- ✚ *Hydraulic piston.*
- ✚ *3-Edge bearing testing machines (concrete pipe crushing testing).*
- ✚ *Die casting machines.*
- ✚ *Pumping systems.*
- ✚ *Customized electronic and telecommunication circuits.*
- ✚ *Computer vision-based industrial inspection.*
- ✚ *Microcontrollers.*
- ✚ *PLCs.*
- ✚ *Drivers and inverters.*
- ✚ *Touch screens.*
- ✚ *DC motor control.*
- ✚ *AC servo systems.*
- ✚ *Stepper systems.*
- ✚ *Mobile robots.*

**The Designed and Implemented Electronic Projects:**

- ◆ *Telephone Calls Voice Recorder.*
- ◆ *Infrared Transmitter and Receiver.*
- ◆ *Laser Remote Controller.*
- ◆ *RF Wireless Transmitter and Receiver.*
- ◆ *AM & DSBSC Modulators and Demodulators.*
- ◆ *PCM & PSK Generation and Detection.*

- ◆ Light Pen.
- ◆ Building useful experiments for undergraduate studies such as *pdf* Determination, Quantization, Sampling, **RF**, and **RC** coupled Amplifiers.
- ◆ **Transformerless D.C.** power supply.
- ◆ Color sensor.
- ◆ Building up a data acquisition channel and interfacing that channel with a personal computer.
- ◆ **Parallel port** interfacing project that can be used to control up to eight **AC/DC** loads via relays.
- ◆ **Stepper motor controller.**
- ◆ **Temperature digital controller.**
- ◆ **Adjustable digital clock.**
- ◆ Hardware and software protection.
- ◆ Nondedicated personal computer that controls fire alarm system or any other system.
- ◆ Solid-state based stairs light *controller.*
- ◆ **EPROM** copier.
- ◆ Generation of waveforms using **EPROM.**

**Hobbies:** Designing of electronic projects, building up interfacing cards and developing the software required for these cards.

**List of publications:**

- [1] A. Hamdy, "Illumination-Invariant Optical Flow Estimation," *Computer Recognition Systems KOSYR 2003*, Wroclaw Univ. of Technology Press, pp. 233-238, 2003.
- [2] A. J. Kasinski and A. M. Hamdy, "Efficient Object Segmentation Techniques for Tracking Mobile Objects Over a Sequence of Noisy Images," *Computer Recognition Systems KOSYR 2001*, Wroclaw Univ. of Technology Press, pp. 421-426, 2001.

- [3] A. Kasinski and A. Hamdy, "Efficient Illumination Suppression in a Sequence by Motion Detection Combined with Homomorphic Filtering," *27<sup>th</sup> Workshop of the Austrian Association for Pattern Recognition AAPR - OEAGM 2003*, Laxenburg, pp. 19-26, 5-6 June 2003.
- [4] A. Kasinski and A. Hamdy, "Efficient Separation of Mobile Objects on the Scene from the Sequence taken with an Overhead Camera," in *Proceedings Int. Conf. on Computer Vision and Graphics*, Zakopane, vol. 1, pp. 425-430, September 2002.
- [5] A. Kasinski and A. Hamdy, "Multiple Mobile Objects Detection and Tracking with an Overhead Camera," in *Proceedings of the 16<sup>th</sup> International Conference on Vision Interface VI'2003*, Halifax, Canada, pp. 105-110, 11-13 June 2003.
- [6] A. Kasinski and A. Hamdy, "Robust Classification of Moving Objects Based on Rigidity Criterion using Region Growing of Optical Flow Fields," *Advanced Concepts for Intelligent Vision Systems Acivs 2003*, Ghent, Belgium, pp. 180-187, September 2003.
- [7] A. Kasinski and A. Hamdy, "Segmentation Based on Homomorphic Filtering and Improved Seeded Region Growing for Mobile Robots Tracking in Image Sequences," *Machine Graphics & Vision*, vol. 10, no. 4, pp. 447-466, 2001.
- [8] Elsayed Saad, Medhat Awadalla, Alaa Hamdy, Hosam Ali, "A distributed algorithm for robot formations using local sensing and limited range communications," *Innovative Production Machines and Systems Conference IPROMS2007*, UK, August 2007.
- [9] M. F. El-Naggar, A. M. Hamdy, S. M. Moussa, N. K. Ibrahim, and E. H. Shehab El-Din, "A Novel Image-Based Approach for Discrimination between Internal Faults and Magnetizing Inrush Currents in Power Transformers," *2007 AUSTRALASIAN UNIVERSITIES POWER ENGINEERING CONFERENCE AUPEC'07*. It has been selected as one of the *three best papers* in the Conference.
- [10] E. Saad, A. Hamdy, and A. Ahmed, "Evolving Comprehensible Neural Network Trees Using Genetic Algorithms," *8<sup>th</sup> International Conference on PATTERN RECOGNITION and IMAGE ANALYSIS: NEW INFORMATION TECHNOLOGIES, IAPR*, Russian Federation, October 2007. It will be published in *International Journal of Pattern Recognition and Image Analysis: Advances in Mathematical Theory and Applications*, no 4 vol. 18, 2008.



- [11] M. El-Adawy, H. Abd El-Monem, A. Hamdy, and S. Dawood, "Improvement of the Preprocessing Stage for Arabic OCR System," *7<sup>th</sup> Conference on LANGUAGE ENGINEERING, THE EGYPTIAN SOCEITY OF LANGUAGE ENGINEERING, Ain Shams University, December 2007.*
- [12] F. Saleh, A. Hamdy, and F. Zaki, "Person Identification through Ear Biometrics," *8<sup>th</sup> International Conference on PATTERN RECOGNITION and IMAGE ANALYSIS: NEW INFORMATION TECHNOLOGIES, IAPR, Russian Federation, October 2007.* It will be published in *International Journal of Pattern Recognition and Image Analysis: Advances in Mathematical Theory and Applications*, no 4 vol. 18, 2008.
- [13] E. M. Saad, A. M. Hamdy, and M. M. Abutaleb, "Reconfigurable Hardware Implementation of a Fast and Efficient Motion Detection Algorithm," *in Proceedings of the 10th WSEAS International Conference on MATHEMATICAL METHODS AND COMPUTATIONAL TECHNIQUES IN ELECTRICAL ENGINEERING (MMACTEE'08), Sofia, Bulgaria, May 2008.* Among the 30 best papers from the conference, this paper has been selected for additional publication in a special issue of the *INTERNATIONAL JOURNAL OF APPLIED MATHEMATICS AND INFORMATICS* of the University Press.
- [14] M. F. El-Naggar, A. M. Hamdy, S. M. Moussa, E. H. Shehab El-Din, "An Accurate Fault Diagnosis of Power Transformer Protection Based on Extracting Moment Invariant Features," (*accepted for publishing*).
- [15] E. M. Saad, M. H. Awadalla, A. M. Hamdy, H. I. Ali, "Multi-Target Tracking using a Compact Q-Learning with a Teacher," (*accepted for publishing*).
- [16] M. M. Abutaleb A. M. Hamdy, and E. M. Saad, "A Reliable FPGA-based Real-time Flow-vector Estimation," (*submitted*).
- [17] I. Ismail, A. Hamdy, and R. Frig, "Studying the effect of down sampling and spatial interpolation on fractal image Compression," (*submitted*).
- [18] I. Ismail, A. Hamdy, and S. Mostafa, "Compound image segmentation," (*submitted*).
- [19] Alaa Hamdy and Mayada Khairy, "Analysis of Shape Coding Approaches Used in MPEG-4," (*accepted for publishing*).
- [20] Alaa Hamdy, Shady Hamdy, "Visual Surveillance in Dynamic Scene," (*accepted for publishing*).

### The teaching method:

- Lectures.
- Class discussions.
- Field exercises, cases, and researches.

### Research interest:

- Image Processing, Image Understanding, and Computer Vision.
- Speech processing.
- Machine Learning.
- Pattern Recognition.
- Artificial Neural Networks.
- Real-time Processing.
- Parallel Processing.

Currently, I am a supervisor of the following Master/Ph.D. research points:

- Rules Extraction and Function Decomposition Using Artificial Neural Networks.
  - Ear Recognition.
  - Blocking Adult Image based on Skin Detection.
  - *MPEG 4* Video Compression.
  - Visual Surveillance in Dynamic Scene.
  - Development of intelligent multi-agent robot teams.
  - Arabic Character Recognition (*ACR*) System.
  - Compound image segmentation.
  - Fractal Image Compression.
  - Iris Recognition.
  - Automatic License Plate Recognition.
  - Watermarking.
  - Reconfigurable Array for Machine Vision Systems.
  - Automated Signature Detection from Hand Movement.
  - Real-Time Disparity Map Computation.
  - 3D Face Recognition.
-