

Ossama Mohamed Mohamed Ismail
President's Advisor at AAST, Arab Academy for Science & Technology
Regional Contest Director, ICPC- ACPC, Africa & Arab countries
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Education:

Ph.D. Department of Computing and Information Science,
Queen's University, Kingston, Canada, August 1994.

M.Sc. Department of Computer Science & Automatic Control,
Alexandria University, Egypt, October 1986.

B.Sc. Department of Computer Science & Automatic Control,
Alexandria University, Egypt, October 1981.

Research Interest: robotics, tele-operations, force control, fuzzy controllers, computer control, microcontrollers and mechatronics applications, computing algorithms, parallel and distributed algorithms, simulation, and animatronics.

Work Experience:

Jan 22-present

ICPC 2023 world Finals Director

Jul 21- present

President's Advisor at AAST

Sept. 02-20

Arab Academy for Science and Technology,
Dean, Regional Informatics Center,
Alexandria, Egypt.

April 97- Sept 01

Arab Academy for Science and Technology,
Faculty of Engineering, Computer Engineering Department,
Alexandria, Egypt.

Courses: Robotics, Advanced computer architecture, Real time systems, Digital Logic design, Mechatronics systems, Parallel programming, Advanced programming, Object oriented language, Computing Algorithms, Data Structures.

June 96-April 97

Lucent Technologies (AT&T-Bell labs),
6400 E. Broad St., Columbus OH, USA

Performance and test Engineer, Duties involved Design, develop, implement, and test a telecommunication network management system, Network protocol interface, network simulation and procedures to verify the functionality and performance of fault-tolerant communication systems. Defining and implementing new software architecture to support technology evolution, simulating design prototype, analyzing design architecture and evaluating system performance. Development in client server **UNIX** network environment using C/C++.

Oct.94 - Feb.96

Robotics and Perception laboratory (RPL).
Department of Computing and Information Science.
Queen's University, Kingston, Canada.

Postdoctoral position. Duties involved Computer programming, simulation, complete installation of an industrial robot arm. Designing and implementing software procedures to remotely control position/force of a haptic device.

Sept.90-Aug.94

Robotics and Perception Laboratory (RPL).
Department of Computing and Information Science.
Queen's University, Kingston, Canada.

Research Assistant. Designed and implemented projects in the area of robotics manipulations, on-line digital control, robot dynamics, system identification, and simulation.

Dissertation Research: Developed an algorithm to grasp and manipulate an object using the entire hand, this research involved writing simulations programs and graphical user interface procedures On C under X-windows to study the effects of collision on the finger dynamics.

Department of Computing and Information Science.
Queen's University, Kingston, Canada.

Teaching Assistant Instructed graduate and undergraduate level courses, Robotics, Parallel algorithms, and Turing language. Consulted and tutored students in analysis of algorithms. Taught lectures in a robotic course.

Sept.83-Sept.88

Arab Academy for Science and Technology.
Alexandria, Egypt.

Lecturer Taught Automatic Control, Instrumentation, programming courses using C, FORTRAN, BASIC, Digital logic Design, and Digital Electronics.

Part-time Programmer/Analyst designed a CAD system for a ship using Microsoft BASIC, FORTRAN, DBASE III, and LOTUS~123. Trained personnel to use and program with many software packages.

Design Engineer. Designed and implemented a Diesel Engine Simulator (Design /Diagnose/ Troubleshoot/ Software/ Hardware) this project involved extensive use of Assembly and FORTRAN.

Projects:

- Supervised team to develop, design, and to implement Quad Cobter [2014 -2014]
- Supervised team to develop, design, and implement animated gorilla [Sept.2003 - 2005]
- Supervised team to develop, design, and implement Access control system [Jan. .2004 - Sept. 2004]
- Supervised team to develop, design, and to implement **GSM** remote control robotics systems [Sept.2003 - Sept. 2004]
- Supervised teams to develop, design, and implement dancing water fountain [Sept.2003-Sept. 2004]

- Supervised several teams of six Engineers to develop, design, and to implement a general- purpose simulation Package (**WKFILM**) Using C++ Builder under Windows. [Sept.97 - Aug.98]
- Developed and designed a complete computer model to test and to study the performance of the ***Next Network Switch (NNS-project Bell-labs)***. The model is written using **SES** simulation package and C++ under UNIX. [June 96-April 97] Bell Labs
- Developed and implemented (in Assembly and C under UNIX) an online Force Feedback Motion Controller (FFMC) for a two-dimensional teleoperation device that permits a human to interact with a real and virtual environment. Developed an algorithm for a high-performance force-feedback haptic interface. The device is designed to be dynamically simple for ease of control. It has over 10 times the mechanical bandwidth of typical robotic devices. It has application in the teleoperation of robots as well as in determining human perception of dynamical parameters. A Sparc workstation, VME bus, and challenger-C30/v hardware are used to computer control the mechanism. The system parameter identifications and transfer functions are computed by using MATLAB, WAVEPACK and ODRPACK software packages. Compensation for the stiction, kinetic friction, system dynamics, and structural frequency has been considered. [Sept.92-Sept.94]
- Implemented and evaluated the results of some simulation programs (in C under UNIX) for robot dynamics, control, and robot force control. Developed, analyzed, and tested software for nonlinear optimization techniques to solve the Grasping problem. Implemented some graphical algorithms in C on SUN under X-Windows system.
- Worked with a team of four engineers to develop, design, and build a control room for a diesel engine simulator (Design/ Diagnose/ Troubleshoot/ Software/ Hardware). This project involved extensive use of Assembly, Basic, and Small talk. [June 83- Aug. 86]

Hardware: Designed interface circuits, data acquisition units, data loggers, and sound generator. (PDP11/10, PDP 11/70, IBM PC's, and ISC).

Software: Wrote protocol programs, Graphic displays programs, networking, troubleshooting, and testing programs.

- Designed an automatic system for composing examinations using an information data bank. This project involved designing a database system for 15 courses and writing a program to select automatically a number of questions of from an exam with required difficulty within a certain time.
- Designed and developed many software packages using C, Assembly, DBASE II, III, and LOTUS~123. Wrote several programs to maintain the student records, registration, and grading.
- Designed and implemented a controller card and a control algorithm to control the speed of DC motors (Software/Hardware). This project involved building a computer interface circuit and writing an assembly program to work as a control algorithm to control the speed of a DC Motor.

Computer Skills:

Languages: C, C++, C#, Java, C#, Python, Pascal, FORTRAN, Basic, Lisp, COBOL, Prolog, Turing, ML, Small talk, Assembly, and other special purpose languages.

Op Systems: UNIX, SunOS, RSTS/E, CP/M, MS-DOS, WANG VS, ISC, and IBM VMS.

Software: MATLAB, WAVEPAK, X-Windows, OpenWindow, LaTeX, Emacs, Gnuplot, Xfig, IslandDraw, DBASE, LOTUS 1-2-3 spreadsheet, AutoCAD, Microsoft MS works, Framemaker, and SES simulation package.

Network: Windows NT, Xmosaic, Netscape, Explorer, Gopher, Archie, telnet, and ftp, ... etc.

Hardware: SUN workstations, VAX 3500, IBM RT, DECsystem-2060, IBM PC's, Micro-VAX, WANG VS100, and TI DS990.

Personal Skills:

Self-starter and have excellent leadership, organizational, communication, analytical and problem-solving skills.

Languages:

Arabic and English.

Publications:

- [1] Mohamed Yasser, Omar Shalash, Ossama Ismail, "**Optimized Decentralized Swarm Communication Algorithms for Efficient Task Allocation and Power Consumption in Swarm Robotics**", Robotics Journal, Vol. 13, Issue 5 2024 Pages 66-77. <https://doi.org/10.3390/robotics13050066>
- [2] HossamEldin Elsayed, Noha Seddik Tawfik, Omar Shalash, and Ossama Ismail, "**Enhancing Human Emotion Classification in Human-Robot Interaction**", ICMISI2024, The 2024 international Conference on Machine Intelligence and Smart Innovations. 2024.
- [3] A Khaled, O Shalash, O Ismaeil, "**Multiple Objects Detection and Localization using Data Fusion**", 2nd International Conference on Automation, Robotics and Computer Engineering (ICARCE), 2023.
- [4] Mushreq Luay Taha, Belal Al-Khateeb, Yasser F Hassan, Ossama MM Ismail, Ossama Abu Rawash, "**Solving competitive traveling salesman problem using Gray Wolf Optimization Algorithm**", Journal-Periodicals of Engineering and Natural Sciences (PEN), 2020 - volume 8 Issue 3- Pages 1331-1344
- [5] El-Gayar I., Ismail O.M., and Elgammal Y., "**Decision Support System For Solving Multi Objective Routing Problem**", International Journal of Computer, Electrical, Automation, Control and Information Engineering, Feb. 2016. ICIIS 2016, Dubai, UAE.
- [6] Abdelfatah T., Ismail O.M., "**The Impact of using the innovative of mobile Learning on Education Quality**", The Fourth International Conference "ICT" ISSN 2314-8942, 2014.
- [7] Belal A. Al-Shami, Ismail O.M, and Mahar Khaled, "**Adaptive Dynamic Multiple Traffic Light Control System Using Genetic Algorithm**" International Journal of Advanced research in computer Science, Vol. 5, Issue March-April 2014 of IJARCS.
- [4] Ismail, O.M., and Alshimaa A.M., "**Nanorobots based detection of cancer cells inside human blood vessels using metaheuristic stochastic Algorithms**", The Second Alexandria International Conference for Statistics, AICS, Alexandria, Egypt Nov. 2013,
- [5] Qatran M. , Mahar K. and Ismail O.M., "**Interest points matching system based On Non-Subsampled Contourlet Transform**", Computer Technology and Development (ICCTD)", 2010 2nd International Conference 245-249, ICCTD 2010- IEEE.
- [6] AbdelRahman A.M., Abou-El-Nasr, Ismail O.M., "**A novel forwarding/dropping decision engine for wireless multi-hop ad-hoc networks**", Collaborative Computing: Networking", Applications and Worksharing, 2009. CollaborateCom 2009. 5th International Conference 1-5, IEEE.
- [7] Elkustaban A., Elmahdy A., and Ismail O.M., "**A CMP with Transactional Memory: Design and Implementation using FPGA Technology**", International Multi-conference of Engineering and Computer Scientists, IMECS 2007, Hong Kong.
- [8] Ismail. O.M., and Bedwani, W., "**Stability of Variable Structure PID Control Systems**", the 4th International Arab Conference on Information Technology, Vol II, Alexandria, Egypt 2003.
- [9] Ismail, O.M., and Hegazy, S.E., "**A Framework for Employing Autonomous Robots in Landmine Detection in Egypt**", Journal of Arab Academy for Science and Technology & Maritime transport, Biannual Scientific Maritime Journal, Vol. 28 No. 56, Alexandria, Egypt, 2003.
- [10] Ismail, O.M., and Sherif H., "**Landmine Detection Using Autonomous Robots in Egyptian Deserts**", IEEE 10th International Conference on Computer application and theory, Alexandria, Egypt, 2002.
- [11] Ismail, O.M., and Bedwani, W., "**Compliant Motion Control Using Variable Structure PID Control**", IEEE 9th International Conference on Computer application and theory, Alexandria, Egypt, 2004

- [12] Ismail, O.M., and Bedwani, W., "**Design of a variable Structure PID Controller Using Genetic Algorithm**", *IFAC 1st IFAC/IEEE SYMPOSIUM ON SYSTEM STRUCTURE AND CONTROL 2001*, Chek, 2001.
- [13] Bedwani, W., and Ismail, O.M., "**Genetic Optimization of Variable Structure PID Control Systems**", *ACS/IEEE International conference on Computer Systems and Applications (AICCSA'01)*, Beirut, Lebanon, 2001.
- [14] Ismail, O.M., Natsheh, E.F., "**PID-Like Fuzzy Logic Controller**", *The 12th International Conference on Control System and Computer Science*, Romania, 1999.
- [15] Natsheh, E.F., Ismail, O.M., and Elsony, M.E., "**Three-Mode Fuzzy Logic Controller and its Enhancement**", *IEEE 9th International Conference on Computer application and theory*, Alexandria, Egypt, 1999.
- [16] Natsheh, E.F., and Ismail, O.M., "**Performance Optimization Design Method for PID-Like Fuzzy Logic Controller**", *The 12th International Conference on Control System Scientific Computations (ICSC99)*, at the Lebanese American University, Beirut, Lebanon. March 1999.
- [17] Ismail, O.M., "**Non-Linear Optimization Techniques for an Enclosure Grasp**", *International Conference on Scientific Computations (ICSC98)*, at the Lebanese American University, Beirut, Lebanon. March 1998.
- [18] Ismail, O.M. and Mounir, K. and Hosny, W., "**General Purpose Simulation Package**", *IEEE 8th International Conference on Computer application and theory*, Alexandria, Egypt, 1998.
- [19] Ellis R.E., Ismail O.M. and Lipset M.G., "**Design and evaluation of a high-performance haptic interface**", *Journal Robotica*, Volume 14, Issue 3 pages 321-327, Cambridge University Press, 1996.
- [20] Ismail, O.M. and Ellis R.E., "**Grasping Using the Whole Finger**", In *Proceeding of the International Conference on Robotics and Automation*, IEEE 1994.
- [21] Ismail, O.M., "**Grasping Using the Entire Hand**", Ph.D, Queen 's University, Kingston, Canada, 1994
- [22] Ellis, R.E. and Ismail, O.M. and Lipsett, M.G., "**Design and Evaluation of a high-performance Prototype Force-Feedback Motion Controller**", *WAM Conference, ASME*, 1993.
- [23] Ellis, R.E. and Ismail, O.M. and Lipsett, M.G., "**Design and Evaluation of a high-performance Prototype planar haptic interface**", In *Advances in Robotics, Mechatronics, and Haptic Interfaces: ASME DSC-Vol. 49*, 1993.
- [24] Ismail, O.M. and Ellis, R.E., "**Effects of Non-Tip External Forces and Impulses on Robot Dynamics**", In *Proceeding of the IEEE International Conference on Systems, Man, and Cybernetics*, 1992.
- [25] Ellis, R.E. and Ismail, O.M. and Carmichael, I.H., "**Numerical Stability of Forward-dynamics Algorithms**", In *Proceeding of the International Conference on Robotics and Automation*, IEEE 1992.
- [26] Ismail, O.M. and Abou-Elnaser, B. and EL-Derini, N., "**Speed Control of Thyristorized DC Motors**", *International Workshop on Microprocessor Control of Small dc Motors*, Institute of Electrical and Electronics Eng., University of Padova, Italy, 1986.
- [27] Ismail, O.M. and EL-Derini, N. and Abou-Elnaser, B., "**Digital Speed Control and Analysis of Performance of Thyristorized dc Motors**", *MONTECH' 86 Conference*, Montreal, Quebec, Canada, 1986.
- [28] Ismail, O.M., "**Microprocessor Control of dc Motors**", Master thesis, Alexandria, Egypt, 1986.

Technical Reports:

- [1] Ismail, O.M. "NNS Call Processing Performance Model", Lucent Technologies, Bell Labs Innovations. Columbus, OH 1997.
- [2] Ismail, O.M. and Ellis, R.E., "Effects of Non-Tip External Forces and Impulses on Robot Dynamics", RPL-TR-9101, Department of Computing and Information Science, Queen's University, 1991.
- [3] Ellis, R.E. and Ismail, O.M. and Carmichael, I.H., "Numerical Stability of Forward-dynamics Algorithms", RPL-TR-9102, Department of Computing and Information Science, Queen's University, 1991.

Conferences Session Chairs:

Chairman of the different sessions, the *IEEE International Conference on Computer theory and applications*, Alexandria, Egypt, 1997 – 2007.

Other Activities

- **ICPC 2023**, World Finals Director of the **ICPC 2023**, Luxor, Egypt. April 2024.
- **ICPC-ACPC**, Regional Contest Director, Africa/Arab Countries 2011- Present
- Director of the **ROV** Egyptian Completion (Remotely Operated Vehicle) contest 2011- 2020.
- World Finals Deputy Director of the **ICPC 2011**, Orlando, FL, USA.
- Chairman of the Host Scientific committee of the **International Olympiad in Informatics IOI-2008. Cairo, Egypt**, August 2008.
- Minister of Education Technical Advisor, Egypt (**2005-2010**).
- Vice Chair of the **Computer Scientific Society (2006 – 2012)**
- Site Director of the **ACM-ANARC 2007, 2008, and 2009**. Alexandria, Egypt.
- Member of the **International Committee of the International Olympiad in informatics (IOI)**, Poland **2005**.
- Member of the International Editorial Board, *Journal of Informatics in Education*, Institute of Mathematics and Informatics, Lithuanian Academy of Sciences- VILNIUS, **2000 - Present**.
- Executive Director of the First Egyptian Robotics contest (**Hunter & Hunted**) for Students under 15 years old. A joined work between the Arab Academy for Science and Technology, British Council in Egypt, and Sheffield University -GB, **Feb 2005**.
- Executive director and head of the scientific committee of the Egyptian Olympiad in Informatics EOI in years **2003 – Present**.
- Team Supervisor won **Robocon-Egypt Contests** in Years **2002, 2003, 2004**. 2006 won a special prize form **MABUCHI MOTOR – JAPAN**, KL-Malaysia. 2006 won 1st and 2nd places in Robocon Egypt 2006.
 - 2006 won 1st and 2nd places in Robocon Egypt 2006.
 - 2005 won 2nd and 3rd places in Robocon Egypt 2005.
 - 2004 won 1st, 4th places in Robocon Egypt 2004.
 - 2003 won 1st, 2nd and 3rd places in Robocon Egypt
 - 2003. 2002 won 2nd place in Robocon Egypt 2002.
- Team coach of the **AAST** team, won the 1st place and the Solid Programmer award in **ACM International Collegiate Regional Programming Contest ACM-ANARC 2006, Morocco**.
- Team leader of the **AAST** team, won 3rd place and the Solid Programmer award in the **ACM International Collegiate Regional Programming Contest. ANARC 2005, Kuwait**.
- The team leader of the **AAST** team won 5th place and the Solid Programmer award in the **ACM International Collegiate Regional Programming Contest. ANARC 2004, Kuwait**.
- Team leader of the **AAST** team won the 3rd place in the **ACM International Collegiate Regional Programming Contest. ANARC 2003, Kuwait 2003**.
- Team leader of the Egyptian team in the International Olympiad in Informatics contests (**IOI**) for years 2000, 20001, 2002, 2003,2004,2005,2006, and 2007.
- Program vice Chair, **IEEE** International Conference on Computer theory and applications, Alexandria 2005 and 2006.