

CURRICULUM VITAE

MAHMOUD MOHAMED ELSAMANTY

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PERSONAL INFORMATION

- Date of Birth: 13/1/1982.
- Military status: Exempted.
- Marital status: Married.
- I.D. number: 1402156.
- Nationality: Egyptian.

EDUCATION

- **Ph.D Mechatronics and Robotics**

Sep. 2011 – Sep. 2014- Two Years in Egypt and one Year in Arai Lab at Osaka University – Japan from Sep 2013 to Sep 2014

Egypt-Japan University for Science and Technology (E-JUST), Alexandria – Egypt.

- Thesis Title:" Design and Control of a Novel Hybrid Ground Aerial Robot".
- Research Area: Robotics

- **M.Sc. Mechanical Engineering**

Sep. 2005 – Feb.2009

Benha University - Faculty of Engineering at Shoubra, Cairo – Egypt.

- Thesis Title:" Online tool wear monitoring in turning using vibration analysis".
- Research Area: Mechanical Vibration

- **B.Sc. Mechanical Engineering**

Sep. 1998 – June 2003

Benha University - Faculty of Engineering at Shoubra, Cairo – Egypt.

- Subject of Study: Very Good with honor degree, and I was Ranked First on my class (1/360).
- Graduation Project Title: "Conversion of a manual center lathe machine to a CNC turning machine using PLC ".
- Graduation Project Grade: Excellent

SKILLS

- **CAD software:**

- SolidWorks, SplitWorks, MoldWorks, IMold, LoggoPress 3 (for sheet metal dies design), CATIA V5, NX Siemens
- CSWP certified SolidWorks for professional 2008

- **CAM Software:**

- CAMWorks, SolidCam, Power mill, Feature CAM.

- Technical support for CamWorks up to 5 axis milling machines, 4 axis simultaneous turning machines, 3 axis EDM machines, and 3 Axis wire cut machines
<http://www.camworks.com/customer-support/certified-technicians/>
- ***Finite element software:***
 - ANASYS, MSC ADAMS.
- ***Programming***
 - Matlab, LabVIEW, C++, ROS.

Language:

1. Arabic: native language.
2. English: Very good, Toefl Score 81

PUBLICATIONS

Accepted and Published

- M. Azziz, **M.Elsamanty**, S. AbdRaboo, Y. Hindy, “A Complete Identification Methodology for Identifying Parameters of Twin Rotor Multi-Input Multi-Output System (TERMS)”, Int. Journal of Science and Engineering Investigations, Vol. 8, Issue 91, PP 187-196, August 2019
- **M. Elsamanty**, M. Sayed, S. Abd Raboo, “Heterogeneous Teleoperation Model for Controlling 3D printed Humanoid Robot Arm with 5 DOF using 3 DOF Exoskeleton”, Journal of Control and Instrumentation, Vol. 10, Issue 2, PP 1-15
- A. A. Alphonse, A. A. Abbas, A. M. Fathy, N. S. Elsayed, H. H. Ammar and **M. Elsamanty**, "Modelling of Continuum Robotic Arm Using Artificial Neural Network (ANN)," 2019 Novel Intelligent and Leading Emerging Sciences Conference (NILES), Giza, Egypt, 2019, pp. 191-195.
doi: 10.1109/NILES.2019.8909308
- Elkholly H.A., Shahin A.S., Shaarawy A.W., Marzouk H., **M. Elsamanty** (2020) “Solving Inverse Kinematics of a 7-DOF Manipulator Using Convolutional Neural Network”, Proceedings of the International Conference on Artificial Intelligence and Computer Vision (AICV2020).
- **M. Elsamanty**, A. Mostafa, A. Ibrahim, “Dynamic Characteristics Study of Re-Entrant Honeycomb Auxetic Structure for AL6082”, Journal od the Egyptian Society of Tribology, Vol. 17, No. 3, July 2020, pp. 37 - 47 ISSN 2090 - 5882
- **M. Elsamanty**, M. Fanni A. Ramadan and A. Abo- Ismail, K. Kamiyama, T. Arai, Design Improvements and dynamic modeling of a Novel Hybrid Ground Aerial Robot, on the 14th International Symposium on Construction Robotics SCR2104, 26-28 Aug, Tokyo, Japan, 2014.
- **M. Elsamanty**, M. Fanni A. Ramadan and A. Abo- Ismail,”Modeling and Control of a Novel Hybrid Ground Aerial Robot”, International Conference of Mechatronics and Automation ICMA2013, 4-7 Aug, Takamatsu, Japan, 2013. Published
- **M. Elsamanty**, A. Khalifa, M. Fanni and A. Ramadan, Methodology for identifying quadrotor parameters, attitude estimation and control”, International Conference on Advanced Intelligent Mechatronics (AIM2013) IEEE/ASME, July 9-12, Wollongong, Australia, 2013. Published
- **M. Elsamanty**, M. Fanni and A. Ramadan,”Novel Hybrid Ground/Aerial Autonomous Robot”, International Conference on Innovative Engineering Systems (IEEE-RAS ICIES2012), Dec. 7-9, Egypt, 2012.

- A. A. Ibraheem, S. M. Abdrabbo, H Gheith, M. Abdel Salam, and **M. Elsamanty**, "Online Tool Wear Monitoring in Turning Using Vibration Analysis and Artificial Neural Network", Transactions of ASJME, Vol. 2, PP 201-212, October, (2009).

Submitted Papers

- Design and implementation of variable inclined air pillow soft pneumatic actuator for bio-impedance applications
- Experimental Path tracking optimization and control of a nonlinear skid steering tracked mobile robot
- Kinematic Analysis of a Novel 6 Degrees-of-Freedom Hybrid Parallel- Serial Robot: Simulation Study

Lab Work Development

- Developing MSM “Mechatronics System and Measurements Lab” at faculty of Engineering – Benha University.
- Establishing Robotics Lab at faculty of Engineering and Applied sciences – Nile University

EMPLOYMENT

Sep. 2019 – Till now	Program Director of Mechatronics Postgraduate program at Nile University and the EU4M program funded by Erasmus +
Sep. 2018 – Till now	Full time Assistant Professor in faculty of engineering and Applied Science Nile University
2018 – 2014	Full time Assistant Professor in faculty of engineering at Shoubra
Spring 2017- Spring 2018	Adjunct Assistant Professor at Mechatronics department at Nile University
Fall 2016 – Spring 2019	Adjunct Assistant Professor at Mechatronics department Université Française d'Égypte
Spring 2017	Adjunct Assistant Professor at Aero Space department at Zewail City
Spring 2015 to Spring 2016	Adjunct Assistant Professor at Misr University for Science and Technology (MUST)
2014 – 2013	Internship in Arai Lab, Osaka University – Japan.
2014 – 2011	Ph.D. scholarship funded by the Ministry of Higher Education and Scientific Research, Egypt.
2011 – 2009	Assistant Lecturer Teaching Undergraduate student in Mechanical Department - Faculty of Engineering at Shoubra – Benha University – Egypt.
2009 – 2004	Demonstrator Teaching Undergraduate student in Mechanical Department - Faculty of Engineering at Shoubra – Benha University – Egypt.

ACADEMIC EXPERIENCE

Full Time Work

- 3 Years’ Experience in Mechanical Department - Shoubra Faculty of Engineering (FENG) as Assistant Professor
- 3 Years (2 Year Full Time + 1 Year Part timer) Experience in Mechatronics Department - Nile University as Assistant Professor

Part Time Work

- Spring 2015 – Spring 2016 Misr University for Science and Technology (MUST)
- Spring 2016 – Fall 2017 High Technological Institute at 10th of Ramadan City (HTI)
- Fall 2016 – Spring 2018 “Universite Francaise D’Egypt” (UFE)
- Fall 2016 Credit Hour Engineering Programs CHEP Faculty of Engineering Ain Shams University
- Spring 2017 Adjunct Assistant Professor at Aero Space department at Zewail City (ZC)
- Spring 2017 Adjunct Assistant Professor at Mechatronics department at Nile University (NU)

A. Teaching Experience

▪ Undergraduate Courses

Introduction to Robotics	MUST – UFE – CHEP ASU – ZC - NU
Advanced Robotics	MUST – ZC – NU
Mechatronics System Design	MUST – UFE – NU
Mechanical Measurements	FENG – NU
Mechanical Vibrations	FENG – UFE
Modeling and Simulation of Dynamic System	FENG – NU – UFE
Automatic Control	FENG – HTI - NU
Industrial Control Process	FENG
PLC Programming	FENG – UFE
Hydraulics and Pneumatics	NU – UFE

▪ Postgraduate Courses

Advanced Automatic Control	Production PhD students
Theory of precise Measurements	Production MSc Students
Sensors and Actuators	Mechatronics Pre-Master Students
Fuzzy Logic Control	Mechatronics MSc Students
Mechatronics Systems Design	Mechatronics MSc Students at (FENG) and (NU)

B. Research Supervision

1. Soft Gripper Design and control
2. Continuum Manipulator
3. Continuum Mobile manipulator
4. Development of Tracking System for Solar Cells using Artificial Intelligence
5. Modeling and Control of Upper limb Mechanism
6. Developing the Inverse Kinematics for Object Grasping for an open Source Humanoid
7. Design and Control of an Adaptive gripper
8. Design of a Novel Serial-Parallel Manipulator
9. System Identification and Control of a Twin Rotor

C. Graduation Project Supervision

❖ (2018-2019) Graduation Projects (Nile University)

1. Motion Control and Trajectory Planning of 6 DOP Serial Manipulator using VR,
“Funded from the Academy of Scientific Research and Technology with 75000 LE”

2. Control and motion planning for Mobile Robot, “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”
3. Design and Control of a real Industrial Robot, “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”
4. Motion Control and Trajectory Planning of 6 DOP Serial Manipulator using AI, “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”

❖ **(2018-2019) Graduation Projects (Nile University)**

1. Mobile Continuum Robot arm “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”
2. Design and Control of a 7 DOF Serial Manipulator. “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”

❖ **(2017-2018) Graduation Projects (Nile University)**

1. Novel hybrid mobile continuum mobile manipulators
2. Serial Manipulator 6 DOF with Guided Vehicle
3. Parallel Robot control using Vision. “**Funded from the Academy of Scientific Research and Technology with 75000 LE**”

❖ **(2017-2018) Graduation Projects (Shoubra Faculty of Engineering)**

1. Design of Upper Limb Assistive Device
2. Control of Lower Limb Exoskeleton
3. Control of Prosthetics hand for handicapped people
4. Design and Control of a hybrid CNC/3D printer Machine
5. Control of Hybrid 3 DOF Delt Robot Manipulator

❖ **(2016-2017) Graduation Projects (Shoubra Faculty of Engineering)**

1. Design and Control of Underwater manipulator for ROV
2. Manufacturing and Control of 3D printed 6 DOF Robot arm
3. Design, Manufacturing and Control of 6 DOF Delta Robot Manipulator
4. Design and control of a Novel Delta 3D-Printer combined to 3D-Scanner. “**Funded from the Academy of Scientific Research and Technology with 60000 LE**”

❖ **(2015-2016) Graduation Projects (Shoubra Faculty of Engineering)**

1. Design and control of underwater Remote operated Vehicle “**Funded from the Academy of Scientific Research and Technology with 45000**”
2. Design and Manufacturing of Pipe inspection robot
3. Design a Large scale 3D printer
4. Design and Control of 6 DOF serial Manipulator

❖ **(2014-2015) Graduation Projects (Shoubra Faculty of Engineering)**

1. Automatic Filling Machine
2. Design of Electrochemical Milling Machine.
3. Enhancing the controller of Mini-milling CNC machine.

D. Funding Projects

1. BEMT – Project (Integrating Blended Entrepreneurial and Manufacturing Technology Competency into Soco-economic Development in Egypt). (Technical Project Director)
Project number: (561929-epp-1-2015-1-ES-EPPKA2- CBHE –JP)
The project is ended by 30 -9 - 2018 and funded by Erasmus Program +
2. VET – ENG Project (Blended Vocational Engineering Industry Shared Learning Environment for Stream of Socially- and Technically-Competent Technicians and Engineers/VET-ENG. (Technical Project Director)
Project number: (574114-EPP-1-2016-1-FI-EPPKA2-CBHE-JP)
The project is ended by 14 -9 - 2019 and funded by Erasmus Program +
3. Innovative Lifelong e-Learning for Professional Engineers (e-ProfEng) (Technical Project Director)
Project number: (586391-EPP-1-2017-1-SE-EPPKA2-CBHE-JP)
The project is ended by 30 -9 - 2020 and funded by Erasmus Program +
4. Development and Manufacturing of Soft Actuated Under Water Robots (SUWR)
The Project Starts 1 -7 – 2020 and funded by ASRT with Budget 1.5 Million (Co-PI)
The project is ended by 30 -9 - 2021

E. Thesis Supervision

1. Mahmoud Salah, Design and implementation for Soft Pneumatic Actuator, **Faculty of Engineering and Applied Sciences – Nile University**
2. Menna Allah Hefny, Novel design of Soft Pneumatic Actuator to bend and twist, **Faculty of Engineering and Applied Sciences – Nile University**
3. Mohamed Hesham, Path tracking optimization and control of a nonlinear skid steering tracked robot, **Faculty of Engineering and Applied Sciences – Nile University**
4. Ahmed Emad, Design and Control of a NOVEL 7 DOF parallel to serial Manipulator, **Faculty of Engineering at Shoubra**, Benha University, 2018 – Present.
5. Baher Mohamed, Solving Inverse Kinematics and Path planning for mobile manipulator with 5 DOF, **Faculty of Engineering at Shoubra**, Benha University, 2018 – Present.
6. Nourhan Hafaz, Adaptive soft gripper for grasping irregular objects, **Faculty of Engineering at Shoubra**, Benha University, 2018 – Present.
7. Ehab Awadallah, **an adaptive grasping tool for 6 DOF Serial Manipulator**, PhD Thesis, Production Engineering, **Faculty of Engineering at Shoubra**, Benha University, 2016 – Present.
8. Mohamed Azizz, Control Algorithm of Hybrid Twin Rotor, M.Sc. thesis, Production Engineering, **Faculty of Engineering at Shoubra**, Benha University, 2016 – Present.
9. Mohamed Medhat, **An adaptive Learning Algorithm for Predicting forward and inverse Kinematics for 5 DOF Articulated Robot**, M.Sc. thesis, Mechatronics Engineering, **Universite Francaise d’Egypte**, 2016 – 2017.

10. Mahmoud Yassin, **Design and Control of an adaptive grasping tool for 6 DOF Serial Manipulator**, M.Sc. thesis, Mechatronics Engineering, Universite Francaise d'Egypte, 2016 – Present.
11. Mina George, **Position control of 6 DOF Serial Manipulator based on VSLAM**, M.Sc. thesis, Mechatronics Engineering, Universite Francaise d'Egypte, 2016 – Present.
12. Ali Megahid, **An Adaptive trajectory Planning for 6 DOF Robotic System”**, M.Sc. thesis, Mechatronics Engineering, Universite Francaise d'Egypte, 2016 – Present.

F. Invited Talks

1. Lecture Note in “Novel Intelligent Leading Emerging Sciences Conference” NILES2019 IEEE under title of “5 Incredibles Soft Robotics Applications”.

G. Research Interest

1. Grasping with Soft gripper
2. Continuum Manipulator
3. Mobile Continuum Manipulator
4. Human-Robot Interaction
5. Rehabilitation and Assistive Device
6. Humanoid Robots AI
7. Delta Robot manipulation
8. Hybrid Serial-Parallel Robots
9. Remotely Operated Vehicles
10. Fault Diagnosis and Auxetic material
11. Neuro-Wavelet analysis – Particle Swarm
12. Neuro- Fuzzy and ANFIS

TECHNICAL EXPERIENCE

- Consultant for PLAST TRADE company for Plastic manufacturing (2015-Till now)
- Working part time from (2009- 2011) PLAST TRADE company for Plastic manufacturing, working as Design Engineer, and I have designed many types of mold:
 1. Two plates Injection mold.
 2. Three Plates Injection mold
 3. Injection mold with side core Mechanism, Split Cores, and Lifter mechanisms.
 4. Blow molding Extrusion Blow moldings.
 5. Profile extrusion molding.
 6. I have designed two complete lines for plastic extrusion production Machines for PPR Pipes.
- Working part time from (2007/2008) in **CAD CAM CIM** company reseller of SolidWorks software, working as application engineer "instructor for teaching solid works and its application", and technical support for CamWorks software.
- Working part time from (2008/2009) in **Shenco** Company for sheet metal dies design.
- Working part time for two year (2004/2005) in **City glass** Factory and working in glass Dies design, and manufacturing I have been designed many types of dies in this factory:
 1. Forming glass Dies

- 2. Blowing and forming glass Dies
- 3. Pressing glass Dies
- 4. Centrifugal forming glass Dies
- Working part time for one year (2003/2004) in TES factory in the sheet metal working "Dies design sheet metal". I have been worked in many types sheet metal working in this factory:
 1. Programming Punching CNC Machines.
 2. Programming Bending CNC Machines.
 3. Design and manufacturing of a blanking and piercing Dies.
 4. Design and manufacturing of a forming Dies.
 5. Design and manufacturing of a Drawing Dies.
- July – Aug 2002 training in ALNASR automotive company.
- July – Sept 2001 training in west Cairo power station.
- July – Aug 2000 training in irrigation and public work company.

REFERENCES

1. Prof. Dr. Yehia Almashad

Professor of Automatic Control and Mechatronics
The President of Delta University
Website: <http://www.bu.edu.eg/staff/yehiaalmashad>
Email: yehia.almashad@feng.bu.edu.eg
ymashad@hotmail.com
Phone: +20-122-3948180

2. Prof. Dr. Saber AbdRabbo

Professor of Automatic Control and Mechatronics
Deputy Dean of Faculty of Engineering, Sinai University
Website: <http://www.bu.edu.eg/staff/saberabdrabbo3>
Email: saberabdrabbo@feng.bu.edu.eg
saberabdrabbo@yahoo.com
Phone: +20-122-0606046

3. Prof. Dr. Abdel-Kader Ibrahim

Professor of Design and production Engineering
Mechanical Department, Faculty of Engineering at Shoubra, Benha University
Website: <http://bu.edu.eg/staff/abdelkaderibrahim3>
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