

CURRICULUM VITAE

PERSONAL INFORMATION:

Name: Hussein Fouad Mohamed Ali

Date of Birth : March 23, 1977

Religion : Moslem, **Citizenship** : Egyptian

Marital Status : Married, (3 sons)

E-Mail: huss_ali77@yahoo.com, hussain.ali@ejust.edu.eg

Tel.: +2 0122 7005293, +2 0102 5388477, +2 02 25312043

Currently : Ph.D., Mechatronics and Robotics Engineering, E-JUST⁽¹⁾



ACADEMIC POSITIONS:

- Lecturer, Mechatronics Dept., Faculty of Eng., Benha Univ. (BU) (09-2016 : Now)
- Lecturer, Mechatronics Dept., Egyptian Acad. for Eng. (EAEAT) (06-2016 : Now)
- Lecturer, Mechatronics Dept., Misr Univ. for Sci.&Tech.(MUST) (06-2016 : Now)
- Research Associate, MTR Dept., (E-JUST) (01-2013 : 01-2016)
- Teaching Assistant, Embedded Systems Department. (ITI) (09-2007 : 01-2013)
- Teaching Assistant, ITI-Mechatronics Department. (ITI) (09-2003 : 01-2013)
- Research Student, ITI-Mechatronics Department.⁽²⁾ (ITI) (09-2002 : 09-2003)

ACADEMIC & TECHNICAL QUALIFICATIONS:

#	Degree, Field of Study	Institution	Research Topic	Grade	Year
5	Ph.D., Mechatronics and Robotics Engineering	E-JUST, Alex., Egypt ⁽¹⁾	Novel Contact Sensor for Landmine Detection	Distinct, GPA: 3.78	2016
4	M.Sc., Mechanical Design and Production Engineering, Robotics and Dynamics	Cairo Univ., Egypt	Requirements and Design Constraints of a Demining Robot Prototype with its Kinematic Modeling, Simulation and Experimentation		2011
3	Diploma, Real Time Software Engineering	Thales Co., & MOMP, Egypt ⁽³⁾	On Board Automobile (OBA) Auto-Pilot	Distinct Rank: 1	2006
2	Diploma, Mechatronics	ITI, MCIT, Egypt ⁽²⁾	Advanced Data Analyzer using LabVIEW	Distinct Rank: 2	2003
1	B.Sc., Mechanical Design and Production Engineering	Cairo Univ., Egypt	Fault Diagnosis of Disk-Rotor System using Neural Networks		2000

(1) Mechatronics and Robotics Engineering, Egypt-Japan University for Science and Technology. Site: www.ejust.edu.eg

(2) Information Technology Institute (ITI) -Ministry of Communications and Information Tech. (MCIT). Site: www.iti.gov.eg

(3) Science and Technology Center of Excellence, Ministry of Military Production (MOMP). Site: www.momp.gov.eg/

PROFESSIONAL INTERESTS:

- Robotics, Dynamic Systems Analysis, Machinery Vibrations, Condition Monitoring.
- Mechatronics Systems, Automatic Control, Embedded Systems, Real Time Systems.
- Micro Electromechanical Systems (MEMS), Microsensor for landmine detection.
- Artificial Intelligence: Neural Networks, Fuzzy Logic, Genetic Algorithms.
- Modeling and Simulation: *Matlab-Simulink, LabVIEW*.
- Finite Element: *COMSOL Multi-Physics, ANSYS*.
- Programming: *Assembly, FORTRAN, C, C++, VC++, ADA, Embedded C*.
- Micro-controller: (*Motorola: HC12, AVR: ATMEGA32, PIC: 16F877*).
- Real Time Operating Systems (RTOS): *Linux-POSIX, MTR68, μ COS*.

FUNDED RESEARCH:

(2013-2016) **Ph.D. Research:** “**Novel Contact Sensor for Landmine Detection**” Main tasks: Research (funded by E-JUST) / Competitions Organizer / Postgraduate Course Assistant. Ex: Intelligent Control Systems (MTR 601).

(2014) **Research Project:** “**Micro Fabrication for Improved Micro Sensors**”, Ministry of Scientific Research, Egypt + Ministry of Higher Education and Scientific Research, Tunis.

(2011) **Master Research:** “**Requirements and Design Constraints of a Demining Robot Prototype with its Kinematic Modeling, Simulation and Experimentation**”, It has been partially supported by the Egyptian Science and Technology Development Fund Program “STDF” through the research project: "Remotely Operated Robots with Application to Landmines Removal in Egypt", Grant # 465.

PATENTS

1- Hussein F.M. Ali, Ahmed M. R. Fath El Bab, Zakarya Zyada, and Said M. Megahed, “**Stiffness Sensor Design for Landmine Detection using 2-DOF System Based on Vibration Absorption Phenomenon**” Egypt Patent No.1782/2015, filed on 10 Nov 2015.

PUBLICATIONS:

- 1- Hussein F.M. Ali, Ahmed M. R. Fath El Bab, Zakarya Zyada, and Said M. Megahed “**Parameter Optimization of a Novel Contact Sensor Based on Frequency Response of 2-DOF Vibration Absorber System for Landmine Detection**”, IEEE-IRIS2016, Japan (2016).
- 2- Hussein F.M. Ali, Ahmed M. R. Fath El Bab, Zakarya Zyada, and Said M. Megahed “**Novel Contact Sensor Concept and Prototype Based on 2-DOF Vibration Absorber System**”, Intelligent Systems, Modelling and Simulation, IEEE 7th International Conference, ISMS 2016 (2016). DOI: 10.1109/ISMS.2016.70
- 3- Hussein F.M. Ali, Ahmed M. R. Fath El Bab, Zakarya Zyada, and Said M. Megahed “**Estimation of Landmine Characteristics in Sandy Desert using Neural Networks**”, Journal of Neural Computing and Applications, Springer, (2015). DOI: 10.1007/s00521-015-2153-z
- 4- Hussein F.M. Ali, Zakarya Zyada, Ahmed M. R. Fath El Bab, and Said M. Megahed “**Inclination Angle Effect on Landmine Detection Estimation in Sandy Desert using Neural Networks**”, The 10th Asian Control Conference, ASCC 2015, (2015). DOI: 10.1109/ASCC.2015.7244615
- 5- Said M. Megahed, Hussein F. M. Ali “**Remotely Operated Robots with Application to Landmines Removal in Egypt**”, 43rd International Symposium. on Robotics (ISR2012), Taipei, Taiwan, Aug. 29-31, (2012).
- 6- Said M. Megahed, Hussein F. M. Ali and Ahmed H. Hussein “**Egypt Landmine Problem: History, Facts, Difficulties and Clearance Efforts**”, International Symposium: Humanitarian Demining 2010, Šibenik, Croatia, 27 – 29 April (2010).
- 7- Said M. Megahed, Hussein F. M. Ali and Ahmed H. Hussein “**Egypt Landmine Problem: History, Facts, Constraints and Demining Techniques**”, 8th International Conference of Production Engineering Design and Development, Ain Shams Univ., Egypt, (2010).

Papers under review:

- 8- "Novel Contact Sensor Based on Frequency Response of 2-DOF Vibration Absorber System for Tissue Compliance"
- 9- "Contact Sensor Models Comparative Study Based on Vibration Response for Landmine Detection"

COURSES, INSTRUCTED AND/OR ASSISTED:

- Robotics.	(ITI, MUST)	- Advanced Robotics.	(MUST)
- Computer Aided Manufacturing	(BU)	- Mechanical Vibrations.	(MUST)
- Artificial Intelligence Techniques	(ITI)	- MatLab-Simulink, LabVIEW.	(ITI)
- Data Structure with C.	(ITI, EAEAT)	- Object Oriented with C++.	(ITI)
- Advanced Machine Design.	(ITI)	- Intelligent Control Systems	(EJUST)
- Microprocessors & Microcontrollers.	(ITI)	- Real Time Embedded Control System.	(ITI)
- Servomechanisms and Motion Control.	(ITI)	- Digital Control Systems.	(ITI)
- Unix, Linux Operating Systems.	(ITI)		

ITI GRADUATION PROJECTS, SUPERVISED:

2011	- Sun Tracker	- Line Tracking Robot
	- Low cost mobile Telemedicine Assessment System (LTMAS) (supervised with team from Paderborn University, Germany.)	
2010	- Driving Assistant System (Matlab Modeling, SW interface)	
	- Artificial Neural Networks for the Prediction of Interferon & Ribavasis Response in HCV Patients	
2009	- CNC machine (HW and SW design and implementation)	
2008	- Automation of Textile Printing Machine (Control with PLC)	
2007	- Braille Printer (HW and SW design and implementation)	
2004	- Wheel Chair	- Mobile Robot

PROFESSIONAL ACTIVITIES

- Aug-2016 Main Lecturer, and Organizer:** Robotics Summer Training in Egyptian Academy for Engineering and Advanced Technology.
- Mar-2014 Organizer and Presenter:** The 1st Egypt Japan Workshop on Practical Education of Mechatronics, EJUST. STDF Project ID: 5137.
- June-2013 Organizer and Presenter:** Workshop on: Robotic Technologies for Humanitarian Landmine Detection, EJUST.

SCHOLARSHIPS

- 2013-2016** Ph.D. in Mechatronics and Robotics, EJUST.
- 2005-2006** Diploma in Real Time Software Engineering (RTSE); Thales, France and Science and Technology Center of Excellence, MOMP, Egypt.
- 2002-2003** Diploma in Mechatronics, ITI.

AWARDS & HONORS:

- 2016** E-JUST Student Conference Attendance Grant. (Best 35% in ISMS2016)
- 2014** E-JUST Medal: Egypt Japan Workshop on Practical Education of Mechatronics.
- 2006** THALES Co., and Ministry of Military Production, RTSE graduation (Rank 1) from the Minister of Military Production, and the Minister of Communications.
- 2006** ITI Medal: from the Chairman, Information Technology Institute.

LANGUAGES:

- Arabic : Mother Tongue.
- English : Very Good (IELTS 6.5 Date: 30-12-2015, TOEFL: 553 from AUC at 2002).
- German : Fair (3 levels from ZFD {Zentrum Für Deutsch}).
- French : Fair (2nd Foreign Language, Secondary School).

REFERENCES

<p>Prof. Said Megahed (Supervisor for my M.Sc. & Ph.D. work) Professor of Robotics and Automatic Control Mechanical Design & Production Department Faculty of Engineering – Cairo University Giza 12613 – Egypt</p> <p>E-mail: smegahed@ejust.edu.eg; smegahed@yahoo.com Mobile: +2 01006541529</p>	<p>Prof. Farid Tolbah (Mechatronics Department advisor at ITI) Professor of Automatic Control and Mechatronics, Faculty of Engineering, Ain- Shams University, Egypt</p> <p>E-mail: tolbah2@yahoo.com Mobile:+2 01004001960</p>
<p>Assoc.Prof. Ahmed M. Rashad Fath El-Bab (Co-Supervisor for my Ph.D. work) Mechatronics and Robotics Department School of Innovative Design Engineering. Egypt-Japan University of Science and Technology E-JUST PO.Box 179, New Borg ElArab City, Postal Code 21934, Alex, Egypt.</p> <p>E-mail: ahmed_rashad@yahoo.com Mobile: +2 01142278744</p>	<p>Assoc.Prof. Zakarya Zyada (Co-Supervisor for my Ph.D. work) Faculty of Mechanical Engineering FKM, University Teknologi Malaysia UTM, Johor, Malaysia; (On leave from Mechanical Power Engineering Department, Faculty of Engineering, Tanta University, Tanta, Egypt). E-mail: zakarya@utm.my; (zzyada@f-eng.tanta.edu.eg) Phone: -Office: +6075534569; Mobile: +601139613661.</p>
<p>Prof. Mohamed Ibrahim Mahmoud (Supervisor for my ITI project) Department of: Industrial Electronics and Control Engineering. Faculty of Electronic Engineering at Menouf - (FEEM), Menoufiya University, Egypt.</p> <p>E-mail: m_i_mahmoud@yahoo.com Mobile: +2 0100 600 82 45</p>	<p>Prof. Abdelfatah M. Mohamed (Chairman of Mechatronics and Robotics Engineering Department) Mechatronics and Robotics Department School of Innovative Design Engineering, Egypt-Japan University of Science and Technology (EJUST) New Borg ElArab City, Alexandria, Egypt</p> <p>E-mail: abdefatah.mohamed@ejust.edu.eg Mobile: +2 01064172259</p>
<p>Prof. Mostafa Hassan Issa (Co-Supervisor for my ITI project) Professor of Mechanical Engineering. Faculty of Electronic Engineering at Menouf- (FEEM), Menoufiya University, Egypt.</p> <p>E-mail: meissa46@yahoo.com; mostafa.eisa@el- eng.menofia.edu.eg Mobile: +2 01000314745</p>	<p>Assoc.Prof. Mohamed Algamil (Lecturer) Automatic Control and Vibration Mechanical Design & Production Department Faculty of Engineering – Cairo University Giza 12613 – Egypt</p> <p>E-mail: hamedeen@yahoo.com Mobile: +2 01006599411</p>

M.Sc. Contribution

Demining Robot Prototype with its Kinematic Modeling, Simulation and Experimentation

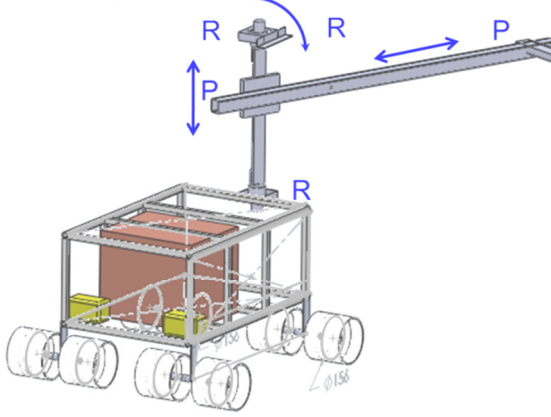


Fig. 1. Robot Modeling

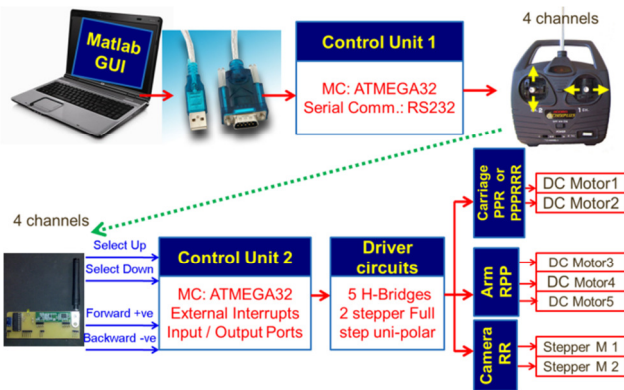


Fig. 2. Control System Architecture



Fig. 3. Control Circuits



Fig. 4. Integrated Robotic System

Ph.D. Contribution

Novel Contact Sensor Based on Frequency Response of 2-DOF Vibration Absorber System for Landmine Detection

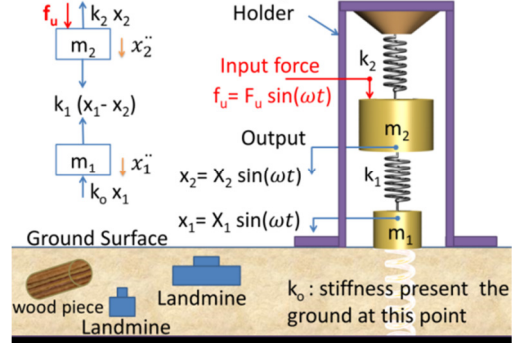


Fig. 5. Sensor physical model and free body diagram.

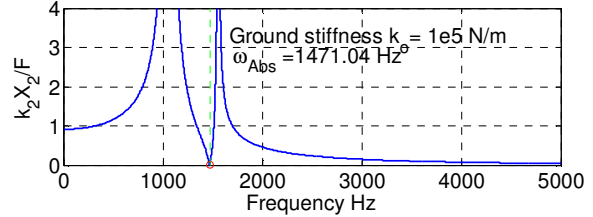


Fig. 6. Optimum design frequency response at ground stiffness $k_0 = 100$ kN/m.

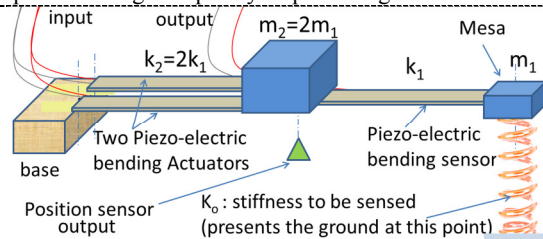


Fig. 7. Piezo-electric version of the proposed sensor

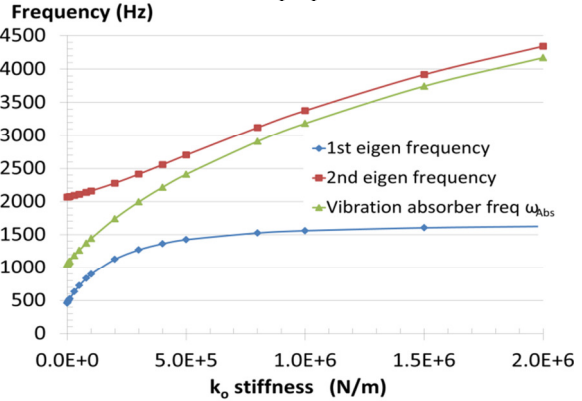
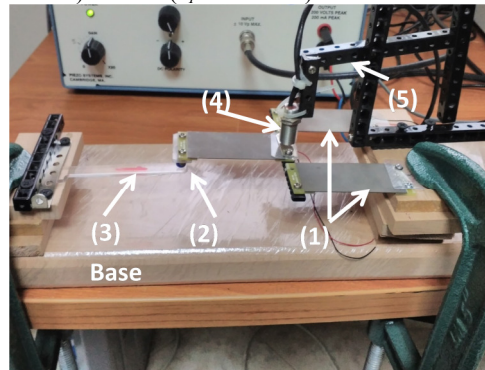


Fig. 8. Optimum sensor frequencies change when changing stiffness k_0 , Range (0-2 MN/m) at $n = 4$ ($k_f = 114$ kN/m).



(1) Two Piezo-electric bending Actuators (2) Indentor
(3) Test specimen 1 with stiffness k_0 (4) Position sensor probe
(5) Position sensor level adjustment mechanism

Fig.9. Sensor prototype