



Dr. Musaab Abdalla Hassan

SMIEEE, MInstP

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CURRENT POSITION: Associate Professor and Director of External Relations; Sudan University of Science and Technology; Khartoum; Sudan

EDUCATION

Oct 2001 –May 2006 University of Newcastle Upon Tyne, United Kingdom
PhD in Electrical and Electronic Engineering (Title: SiC Microelectromechanical Systems (MEMS); characterisation and actuation of 3C-SiC cantilevers and bridges)
The project was funded by *EPSRC (Engineering and Physical sciences Research Council, United Kingdom)*.

Sep2000 – sep2001 University of Newcastle Upon Tyne, United Kingdom
MSc (Automation and Control), with Distinction

1994 - 1999 International Islamic University, Malaysia
B.Eng. (Hons) Mechatronics Engineering ; Awarded degree class: 2.2

PROFESSIONAL MEMBERSHIPS & AFFILIATION

- Senior Member of Institution of Electrical And Electronics Engineering (IEEE), SMIEEE
- Member of Institute of Physics, MInstP

HONORS AND AWARDS:

- Awarded EPSRC (Engineering and Physical sciences Research Council, United Kingdom) scholarship for PhD
- Awarded International Postgraduate Scholarship, University of Newcastle Upon Tyne (UK)

ACADEMIC WORK EXPERIENCE (NON-ADMINISTRATIVE)

Mar13- present Associate professor, School of Mechanical Engineering, Sudan University of science and technology, Khartoum, Sudan

Mar.10- Mar.13 Assistant professor, Sudan University of science and technology, Khartoum, Sudan.

June 06- march10 Assistant professor, Department of Biomedical Engineering, University of Medical Sciences and technology, Khartoum, Sudan

ACADEMIC WORK EXPERIENCE (ADMINISTRATIVE)

- March12- present Director of External Relations Department; Sudan University of Science and Technology (SUST); Khartoum; Sudan**
Duties include
- Preparation of Memorandum of Understanding (MoU) and agreement between SUST and other universities and institutions
 - Supporting international and local collaboration with universities, research centres, governmental institutions as well as industry.
 - Signing MoU at some occasions on behalf of Sudan University of Science and Technology
 - Represent the university in various programs organised by the Association of Arab Universities
- Jan11- Feb.12 Postgraduate Studies Coordinator, Dept. Of Mechanical Engineering , University of Science and technology, Khartoum, Sudan**
- April07- May07 Acting Dean, Faculty of biomedical engineering, , University of Medical Sciences and Technology, Khartoum, Sudan**
- Oct07- Feb08 Master of Business Administration (MBA) coordinator, Faculty of Business and Financial Sciences , University of medical sciences and technology, Khartoum, Sudan**
The number of students in this master program exceeded 500 students.
- May08- march 10 Head, department of Electronics engineering, University of Medical Sciences and Technology, Khartoum, Sudan**
- June08- March10 Master of Biomedical Engineering Coordinator, department of biomedical Engineering, University of Medical Sciences and Technology, Khartoum, Sudan**
- June06- June09 Projects Coordinator, department of biomedical Engineering, University of Medical Sciences and Technology, Khartoum, Sudan**

INDUSTRIAL/ BUSINESS WORK EXPERIENCE

- Dec08- Dec09 Chairman and General Manager, Olul-albab for Research and Development, Khartoum North, Block.8, No. 132.**
- March 05- may06 Technical assistant, British Telecoms -Retail ;SEARCH, Newcastle upon Tyne, United Kingdom**
- July 98 - Sep 98 Electrical and Electronic Engineer, National Electricity Corporation (Sudan):**
undergraduate work placements

TEACHING EXPERIENCE:

Undergraduate's courses

- 1- Mechanical Measurements & Instrumentation (Sudan University, Khartoum, Sudan)
- 2- Automatic Control (Sudan University, Khartoum, Sudan)
- 3- Electrical Measurements (Khartoum University, Khartoum, Sudan)
- 4- Research Methods (Sudan University, Khartoum, Sudan)
- 5- Statics (UMST, Khartoum, Sudan)
- 6- Dynamics (Sudan University, Khartoum, Sudan)

- 7- Mechanics of materials (UMST, Khartoum, Sudan)
- 8- Fracture Mechanics (UMST, Khartoum, Sudan)
- 9- Heat and Mass Transfer (UMST, Khartoum, Sudan)
- 10- Physics (UMST, Khartoum, Sudan)

Postgraduate's courses (Master's level):

- 1- Mechatronics System Design (Sudan University, Khartoum, Sudan)
- 2- Mechatronics Systems (Sudan University, Khartoum, Sudan)
- 3- Advanced Heat Transfer (Sudan Academy, Khartoum, Sudan)
- 4- Research Methodology (Sudan University, Khartoum, Sudan)

SUPERVISION OF GRADUATION AND MSc PROJECTS:

Examples of supervised graduation projects:

- 1- Automatic control of the temperature in a shaft bearing
- 2- modelling microelectrothermal actuator using MATLAB/SIMULINK
- 3- Design of artificial socket
- 4- Automatic guided vehicle using LABVIEW
- 5- Pick and place robot
- 6- Wireless temperature monitoring
- 7- Lifting machine for elderly people
- 8- MEMS temperature sensor
- 9- Modelling of a tire pressure micro-sensor using ANSYS
- 10- Piezoelectric micro electro mechanical power generator

Examples of currently and previously supervised Master projects:

- 1- Design of MEMS switches for RF applications
- 2- Cold Storage Control System
- 3- Design of electrostatic/electrothermal frequency mixer using MATLAB
- 4- Effect of the Electrode position on the Dynamic Behaviour of electrostatically actuated MEMS Resonator

RESEARCH FUNDS:

- | | |
|-------------------|---|
| 2001- 2004 | <i>EPSRC (Engineering and Physical sciences Research Council, United Kingdom):</i> PhD scholarship |
| 2011 | Design of Microelectromechanical (MEMS) Mixer: funded by Ministry of Higher Education and Scientific Research, Sudan |

RESEARCH BOOKS AND MONOGRAPHS:

- **M. Hassan**, "Microelectromechanical Devices; Design, Fabrication, and Characterisation of SiC MEMS", LAP Lambert Academic Publishing, Germany, ISBN: 978-3-8383-2175-2, march 2010.

PEER-REVIEWED PUBLISHED ARTICLES

- 1- Amer Abdallah, Ali Ishag, Salah El-Deen Osman, Mohanad Yousif, and **Musaab Hassan**, "Thermal Analysis of Electrostatic Micro Actuator", International Journal of Mechatronics,

Electrical and Computer Technology, Vol.4(10), 2014

- 2- **Musaab. Hassan**, Hajer Eltigani, Elsarraf Ibrahim, Wijdan Abdalla, "Electronic detection of pneumothorax using frequency-to-voltage converter", *Int. J. Biomedical Engineering and Technology*, Vol. 11, No. 2, 2013
- 3- **Musaab Hassan**, Sahar khider, Sahar Mahjob, and Ibrahim Ahmed, "Motion detection of patient in MRI using mechanical mercury switches", *Int. J. Biomechatronics and Biomedical Robotics*, Vol. 2, No. 1, 2012
- 4- **Musaab Hassan**, Electrostatically actuated 3C-SiC MEMS for frequency mixing, *Journal of Mechatronics*, Vol. 1, 21–24, 2012
- 5- **Musaab Hassan**, Using Look-up Tables to Model an Electromagnetic Suspension System, *American Journal of Applied Sciences*, Vol.9, No.8, 2012.
- 6- **Musaab Hassan**, Hammam Mahjoub and Mohammed Obed,, Voice-based control of a Dc servo motor, *American Journal of Engineering and Applied Sciences*, Vol..5, 2012.
- 7- **Musaab Hassan**, Alaa Alsadig Ali, Samah Izzeldeen Osman, Mai Kamil Saeed, "Automatic Control of Temperature in a Shaft Bearing", *International Journal of Control Science and Engineering*, Vol. 2, No.2, 2012
- 8- **Musaab Hassan**, Asiel Satti, Azza Hussien, Tarteel Tag El-Din, "Electronic Cough Monitor", *American Journal of Biomedical Engineering*, Vol.2, No.2, 2012
- 9- **Musaab Hassan**, "Modelling Electromagnetic Suspension Force Using Measured Inductance-Airgap Data", *Electrical and Electronic Engineering 2012*, 2(2): 64-67.
- 10- **M. Hassan**, "Determination of residual stresses in a single crystalline 3C-SiC micro-fabricated structure using FE model and measured resonance frequencies", *Journal of Microsystem Technologies*, Vol.18, No.3, 2012
- 11- **M. Hassan**, "Pt/3C-SiC electrothermal cantilever for MEMS-based Mixers", *Journal of Microsystem Technologies*, Vol.17, No.3, 2011.
- 12- **M. Hassan**, "Reliability of Pt ohmic contact on an undoped 3C-SiC micro-electrothermal device", *Journal of Microsystem Technologies*, Vol.17, No.1, 2011.
- 13- Michele Pozzi, **Musaab Hassan**, Alun J Harris, Jim S Burdess, Liudi Jiang, Kin K Lee, Rebecca Cheung, Gordon J Phelps, Nick G Wright, Christian A Zorman and Mehran Mehregany, "Mechanical properties of a 3C-SiC film between room temperature and 600 °C", *J. Phys. D: Appl. Phys.* Vol. 40, No 11, June 2007
- 14- Liudi Jiang, R. Cheung, J. Hedley, **M. Hassan**, A.J. Harris, J.S. Burdess, M. Mehregany and C.A. Zorman, "SiC cantilever resonators with electrothermal actuation", *Sensors and Actuators A: Physical*, Vol. 128, No.2, 2006
- 15- L. Jiang, R. Cheung, **M. Hassan**, A.J. Harris, J.S. Burdess, C.A. Zorman and M. Mehregany, "Dry release fabrication and testing of SiC electrostatic cantilever actuators", *Microelectronic Engineering*, 78-79, 2005
- 16- L. Jiang, R. Cheung, **M. Hassan**, A. J. Harris, J. S. Burdess, C. A. Zorman and M. Mehregany, "Fabrication of SiC micro-electro-mechanical systems (MEMS) using one-step dry etching", *J. Vac. Sci. and Technol.*, B2, 2003

PEER-REVIEWED ACCEPTED ARTICLES

- 17- Abdelhaleem Obeid and **Musaab. Hassan**, "A CAD model of DC-contact MEMS series switch", *International Journal of Mechatronics, Electrical and Computer Technology*, 2013

CONFERENCES AND PRESENTATIONS:

- 1- Ammar Atia, Moayad Mamoon Ibrahim, Omer Abd Alghar Mohamed and **Musaab. Hassan**, "Modeling Of Electrostatically Actuated Temperature Sensor", *International Conference on*

- Computing, Electrical and Electronics Engineering, Corinthia Hotel, Khartoum, 26 Aug - 28 Aug 2013
- 2- **M. Hassan**, L. Jiang, R. Cheung, A. J. Harris, J. S. Burdess, C. A. Zorman and M. Mehregany," SiC for MEMS-based filters", presented at 2nd International Conference on MEMS and Nanotechnology, Kuala Lumpur, Malaysia, May 2008
 - 3- **M. Hassan**, "Research in Sudan: obstacles and proposed solutions , Lecture presented before the staff of the College of Engineering in the Scientific Research Week, Sudan University, Sudan, Dec. 2011.
 - 4- **M. Hassan**, "What is Mechatronics", Lecture presented before the Department of Mechanical Engineering, Sudan University, Sudan, May 2010.
 - 5- **M. Hassan**, "Mechatronics, the multi-disciplinary Engineering", Lecture presented before the Department of Electrical and Electronic Engineering, University of Khartoum, Sudan, April 2009.
 - 6- **M. Hassan**, "Nanotechnology and MEMS/NEMS", Lecture presented before the Department of Electrical and Electronic Engineering, University of Khartoum, Sudan, June 2009.
 - 7- **M. Hassan**, "SiC and SiC/SiO₂ micro-structures; Modeling and characteristics", PG conference, electrical and electronic engineering department, Newcastle University, Feb 2003.
- I have given number of presentations in MEMS to other researchers in Nanotechnology Centre (INSAT), Newcastle Upon Tyne, UK.

OTHER PUBLICATIONS IN ARABIC:

- 1- Musaab Hassan, "Towards a numerical method to evaluate and weigh benefits and harms from Islamic jurisprudence view", submitted to the Islamic Journal of Islamic University (Al-Madina Al-Monawarah), December 2013.
- 2- Musaab Hassan, " An Islamisation vision of engineering sciences", Journal of Islamic Sciences and Research, Vol.14(2), Sudan University of Science and Technology, 2014
- 3- Musaab Hassan, " New approach of writing the prophet's biography using programming systems", The contemporary Muslim (*AL-Muslim Al-Muassir*) Journal, Vol.37, No.(147), 2013
- 4- Musaab Hassan, "Islamisation of Engineering Sciences: issues related to mechanical, electrical, and electronic engineering", Islamisation of Knowledge Workshop, Institute of Islamic Science and Research, Sudan University of Science and Technology, 19th June 2012, Khartoum, Sudan
- 5- Musaab Hassan, "A proposal for using mean of weights method and fuzzy logic to estimate the degree of certainty regarding the continuity of hadith", Journal of Islamic Sciences and Research, Sudan University of Science and Technology, issue No.3, 2012.
- 6- Musaab Hassan, " In addressing different approaches to overcome the technical advancement in Muslim World , Rakaiz elmaarifa for Studies and research, available on <http://rakaiz.org>. full address: http://rakaiz.org/index.php?option=com_content&view=article&id=462:2012-02-08-22-01-52&catid=59:2011-07-10-10-18-29&Itemid=97
- 7- Musaab Hassan, "Raising Questions to our Muslim Scholars Regarding Technical Advancement in Muslim World", Rayaam Newspaper, Sudan , Issue No. 476422, Monday 5th December, 2011

PROFESSIONAL TRAINING:

- **Hands on MEMS**, training course at FRSM (Swiss Foundation for Research in Microtechnology) 21-22/03/2002, Neuchatel, Switzerland.

ADDITIONAL EXPERIENCE

Manuscript Reviewing

- Advisory Board Member' for the journal - 'Journal of Biomedical and Bioengineering' for a period three years up to 14 Feb 2016

- Member, Board of Editors, Journal of Engineering and Computer Sciences (2012)
- Reviewer; International Conference on Computing, Electrical and Electronics Engineering, Corinthia Hotel, Khartoum, 26 Aug - 28 Aug 2013
- Reviewer; International Journal of Control Science and Engineering, ISSN: 2168-4952 (since May 2012)
- Reviewer; Journal of Mechanical Engineering and Automation (since May 2012)
- Reviewer; American Journal of Biomedical Engineering (since May 2012)
- Reviewer; Electrical and Electronic Engineering (since May 2012)
- Reviewer; BIOINFO-Journal of Mechanical Engineering (2011-present).
- Reviewer; Journal of Engineering and Technology Research: ISSN:2006-9790 (2009).
- Reviewer, International Conference on Islamic Applications in Computer Science and Technologies 1st – 2nd July 2013, Kuala Lumpur, Malaysia

Committees' membership:

- Member, Liaison Committee, International Conference on Islamic Applications in Computer Science and Technologies 1st – 2nd July 2013, Kuala Lumpur, Malaysia
- Member, Technical Committee of International Conference on Computing, Electrical and Electronics Engineering, Corinthia Hotel, Khartoum, 26 Aug - 28 Aug 2013
- Member, Programs Approval Committee, Ministry of Higher Education, Sudan (2010):
I was invited three times to review proposals for mechatronics/electromechanical programs. The aim is to accept or reject the applications to run these programs.
- Member, University Senate (UMST - Sudan) : 2006 to 2010.
- Member, Departmental Research Council, Faculty of Engineering, Sudan University of Science and Technology (2011)
- Member, Faculty Research Unit, Faculty of Engineering, Sudan University of Science and Technology (2011)
- Member, New programs approval committee (UMST) : 2006 to 2010.
- Member, Curriculum Revision Committee (UMST - Sudan): 2006 to 2010.
- Chair, Mechatronics Engineering Program Proposal (Sudan University of Science and Technology):
Chaired a committee assigned by the College of Engineering to propose a new undergraduate program in Mechatronics Engineering.
- Chair, Mechatronics Track Session in International Conference on Computing, Electrical and Electronics Engineering, Corinthia Hotel, Khartoum, 26 Aug - 28 Aug 2013

External Academic Examination:

- Internal examiner at Sudan University of Science and Technology
- External examiner at Technical Education Corporation – Sudan): Evaluation of the Mechatronics program.
- External examiner for undergraduate projects (Khartoum University, Sudan).
- Graduation projects examiner, department of Electrical and Electronic Engineering, Khartoum University, Sudan (2010)

COMPUTER AND TECHNICAL SKILLS:

- Good Knowledge of programming in C++, and MATLAB.
- Good knowledge of programming in Assembly.
- Experience of using CAD software (AUTOCAD, MATHCAD).

- Experience of using FEM software (ANSYS)..
- Fluent in English and Arabic (Mother tongue).

INTERESTS AND ACTIVITIES

- Travelling - travelled in Middle East Some (Arabian Gulf countries: Saudi Arabia, Qatar, Bahrain, Oman, and other Arab countries ;Jordan, and Egypt), Europe (many cities in United Kingdom, and Switzerland) & in Asia (Malaysia, Singapore, and China) gaining greater knowledge of those areas.
- Table tennis - second prize in a local organised competition (Riyadh/KSA).
- Effective member of Sudanese society in Malaysia & Newcastle (U.K).
- Reading
- Group discussion – Via Internet, relative to my study.
- Effective member in “Life makers” organisation (charitable organisation in Khartoum, Sudan)
- Founder of Tanmiyah group discussion in yahoo. (<http://groups.yahoo.com/group/tanmiyah>). The aim of the group is to discuss issues that affect technical development “tanmiyah” in the Arab/Muslim world. The website contains several articles and proposals.
- General Secretary of the Islamic society, University of Newcastle Upon Tyne (2001-2004). The society has more than 300 members.

REFEREES

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Acting Dean, Faculty of engineering,
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