

# Curriculum Vitae

**Name** Essam-Eldin Mohammed Shaban  
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**Date of Birth** 15<sup>th</sup> July 1967  
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Jazan University  
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## Qualification

**2002 – 2006** Ph.D. in Mechatronics (Robotic Control)  
**Thesis title:**  
*State Dependent Parameter Control Applied to Construction Robots and Other Nonlinear Systems*  
Engineering Department – Lancaster University – UK  
<http://www.lancs.ac.uk/staff/taylorcj/projects/shaban.htm>

**1991 – 1996** M.Sc. in Mechanical Design (Dynamics of Machinery)  
**Thesis title:** *Dynamic Analysis of Serial Semi-Elastic Robots*  
Mechanical Design Department – Faculty of Engineering  
Helwan University – Cairo - Egypt

**1984 – 1989** B.Sc. in Mechanical Engineering  
Grade: *Very Good with honour rank*  
Project Grade: *Excellent*

## Current and Previous Positions

|                       |   |
|-----------------------|---|
| <b>1989 – 1996</b>    | Demonstrator<br>Mechanical Design Department – Faculty of Engineering (Mataria)<br>Helwan University<br>Cairo – Egypt         |
| <b>1996 – 2002</b>    | Lecturer Assistant<br>Mechanical Design Department – Faculty of Engineering (Mataria)<br>Helwan University<br>Cairo – Egypt   |
| <b>2002 – 2006</b>    | Lecturer in Engineering Department<br>Lancaster University<br>Lancaster – UK  |
| <b>2006 till 2010</b> | Assistant Professor<br>Mechanical Design Department – Faculty of Engineering (Mataria)<br>Helwan University<br>Cairo – Egypt  |
| <b>2010 till now</b>  | Assistant Professor<br>Mechanical Engineering Department – Faculty of Engineering<br>Jazan University<br>Jazan – Saudi Arabia |

## Experiences

- ☞ Over 15 years experience in teaching kinematics and Dynamics of closed and open chain mechanisms (ROBOTS).
- ☞ Over 10 years experience in System Modelling and Simulation, and Intelligent System Control.
- ☞ Over 6 years experience in using Graphic User Interface packages such as MATLAB/Simulink® and LabView®.
- ☞ Over 15 years experience in using programming languages such as BASIC and C++.
- ☞ Over 6 years experience in digital control and dynamics.

## Research Profile

- ☞ 5 years experience in research and over 15 publications in the open literature. Contributions in the areas of computer-aided control system design, particularly with regards to the development of Non-Minimal State Space (NMSS) methods and Proportional-Integral-Plus (PIP) control. Most of the applied works are regarding construction robotics.
- ☞ All my recent researches are about increasing the robustness of nonlinear system control by using linearisation by feedback..

## Collaborations

- ☞ Solving the problem of steady state error of Bitumen temperature at INSUMAT Company, Tamouh – Egypt. True Digital Controller using PIP methodology had been designed and implemented to retain the temperature of Bitumen temperature within the permissible set value, Egypt (2014).
- ☞ Controlling the temperature of Hot Air in Cellopack Company using closed-loop feedback system. A LabVIEW® program was created to receive/send the feedback/actuator signal, respectively. Cellopack Company for Packing Industries, 6<sup>th</sup> of October City, Egypt, (2008).
- ☞ Solving the verticality problem by automatic controlling of the vibro-lance using PIP control. A closed feedback system program using C++ has been established for both high- and low-level control. Bachy Soletanche Ltd., Burscough, UK (2004).  
<http://www.lancs.ac.uk/staff/taylorcj/projects/shaban.htm>
- ☞ Automatic Digging of a trench using a small digger arm. Engineering Department – Lancaster University, Lancaster, UK. <http://www.lancs.ac.uk/staff/taylorcj/nonlinear/default.htm>.

## Teaching

- ☞ Mechanical Design
- ☞ Mechanical Vibration
- ☞ Dynamics of machinery  
Kinematics and Dynamics of Closed and open-loop mechanisms
- ☞ System Modelling  
Modelling of mechanical system using mathematical and experimental approaches
- ☞ Mechatronics  
Modelling of mixed systems using experimental methods  
Sensors and Actuators  
System integration

## Publications

- ☞ Shaban, E.M., Taylor, C.J. and Chotai, A., (2004), State dependent parameter Proportional-Integral-Plus (SDP-PIP) control of a nonlinear robot digger arm, UKACC Control 2004, 6-9 September, Bath, UK.
- ☞ Taylor, C.J. and Shaban, E.M., (2004), Multivariable Proportional-Integral-Plus (PIP) control of the ALSTOM nonlinear gasifier model, UKACC Control 2004, 6-9 September, Bath, UK.
- ☞ Dixon, R., Taylor, C.J. and Shaban, E.M. (2005) Comparison of classical and modern control applied to an excavator-arm, International Federation of Automatic Control 16th Triennial World Congress (IFAC-05), July, Prague, Czech Republic.
- ☞ Shaban, E.M., Zied, K., Taylor, C.J. and Seward, D.W. (2005) Nonlinear control system design for construction robots: estimation, partial linearization by feedback and state-dependent-parameter control, 22nd International Symposium on Automation and Robotics in Construction (ISARC-05), September, Ferrara, Italy.

- ☞ Taylor, C.J. and Shaban, E.M. (2006) Multivariable Proportional-Integral-Plus (PIP) control of the ALSTOM nonlinear gasifier simulation, *IEE Proceedings, Control Theory and Applications*, 153, 3, 277-285.
- ☞ Sidiropoulou, E., Shaban, E.M., Taylor, C.J., Tych, W. and Chotai, A. (2006) Linear, nonlinear and classical control of a 1/5th scale automated excavator, *18th International Conference on Systems Engineering (ICSE-06)*, September, Coventry, UK.
- ☞ Taylor, C.J., Shaban, E.M., Chotai, A. and Ako, S. (2006) Nonlinear control system design for construction robots using state dependent parameter models, *UKACC International Conference (Control-06)*, August, Glasgow, UK.
- ☞ Mohamed J. Bakari, Derek W. Seward, E.M. Shaban, and Rahee Y. Agate, “Multi-Arm mobile robot for hazardous nuclear decommissioning tasks”, *23rd International Symposium on Automation and Robotics in Construction (ISARC-06)*, October, Tokyo, Japan, pp. 231 – 236, 2006.
- ☞ Taylor, C.J., Shaban, E.M., Chotai, A. and Ako, S. (2006) Development of an automated verticality alignment system for a vibro-lance, *7th Portuguese Conference on Automatic Control (Control-07)*, September, Lisbon, Portugal.
- ☞ Shaban, E.M. and Taylor, C.J. (2006) Proportional-Integral-Plus control of a class of nonlinear systems using exact and partial linearisation by feedback, *Automatic Control and System Engineering Journal (ACSE), Special Issue on Automatic Control Specific Applications*, 6, 55-70, *International Conference on ACSE*, December 2005, Cairo, Egypt.
- ☞ Taylor, C.J., Shaban, E.M., Stables, M.A. and Ako, S. (2007) Proportional-integral-plus control applications of state-dependent parameter models, *Journal of Systems and Control Engineering*, 221, Part I.
- ☞ E.M. Shaban, S. Ako, C.J. Taylor, and D.W. Seward, “Development of an automated verticality alignment system for a vibro-lance”, *Journal of automation in construction*, Vol. 17(5), pp. 645–655, July 2008
- ☞ Shaban, E.M., and Elsayed, M. , (2009), Design, Simulation and Implementation of A Class of True Digital Control (TDC) Applied to Natural Gas Burner, ID 8, ICCES01 Control 2009, Egypt.
- ☞ Shaban, E.M., (2012), Deadbeat Response of Nonlinear Systems Described by Discrete-Time State Dependent Parameter Using Exact Linearization by Local Coordinate Transformation, *Journal of American Science*, 8(11030).
- ☞ E.M. Shaban, C.J. Taylor, S. Ako, and A. Abdelhamid, “Design, Simulation and Implementation of a Class of True Digital Control (TDC) Applied to Industrial Applications”, *5th Proceedings of the 5th Egyptian Association Technical Meeting (EEATM 2013)*.
- ☞ A. Abdelhamid, E.M. Shaban, K.M. Zied, Younes Khalil, (2013), “Implementation of a Class of True Digital Control (TDC) in the Navigation of a Ground Vehicle”, *American Journal of Research Communication*, Vol. 1 (6), pp. 99 – 111, ISSN: 2325-4076, [www.usa-journals.com](http://www.usa-journals.com).
- ☞ E.M. Shaban, and Ayman A. Nada, “Proportional-Integral-Derivative versus Proportional-Integral-Plus Control Applied to Mobile Robotic System”, *journal of American Science*, <http://www.jofamericanscience.org>, Vol. 9(12), pp. 583–591, 2013.
- ☞ E.M. Shaban, and Ayman A. Nada, “On linearization of nonlinear dynamic systems described by State Dependent Parameter (SDP) discrete-time model”, *ECCOMAS 2014*, July, Barcelona, Spain. Accepted on 14th of February 2014.

- ☞ E.M. Shaban, Ayman A. Nada, and C.J. Taylor, “Exact linearization by feedback of state dependent parameter models applied to a mechatronics demonstrator”, *UKACC 10<sup>th</sup> international conference on control*, Loughborough University, 9<sup>th</sup> –11<sup>th</sup> July 2014, UK. Accepted on 14<sup>th</sup> of March 2014.
- ☞ AR. Hamed, R.R. Darwish, E.M. Shaban, and A.M. Abdel ghany, “Hardware Synthesis and Dynamic Modeling of Bitumen Tank”, *Journal of American Science*, published on 16<sup>th</sup> of December 2014, Vol. 10 (12), pp. 183 – 189, 2014.

## References

- ☞ Dr. James Taylor, Senior Lecturer, Engineering Department, Lancaster University  
[c.taylor@lancaster.ac.uk](mailto:c.taylor@lancaster.ac.uk)
- ☞ Prof. Dr. Derek Seward, Head of Engineering Department, Lancaster University  
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- ☞ Prof. Dr. Al-Adl Rabiea, Professor and Head of Mechanical Design Department, Faculty of Engineering (Mattaria), Helwan University, Cairo – Egypt.