Curriculum Vitae – Ayman A. A. Nada

Personal Information

Ayman A. A.Nada
37 Moh. El-Kalafawe St.
Shoubra - Cairo
Egypt
tel: +2 12 2610955
ayman.nada@bhit.bu.edu.eg
arobust@tedata.net.eg

Education

PhD Degree in Mechanical Design and Production Engineering (2007).
University: Cairo - Egypt.
Thesis advisor: Said Megahed (PI).
Thesis title: *Flexible Robotic Manipulators:*Modeling, Simulation and Control with Experimentation.

Master Degree in Mechanical Engineering (2000).
University: Benha - Egypt.
Thesis advisors: Ahmed Abo-Ismail (PI) and Ahmed El-Betar.
Thesis title: Robust H_∞ Control of Railroads Lining System.

Bachelor degree in Mechanical Engineering (1994).
University: Benha - Egypt.
General Grade : Very Good .
Graduate Project Grade: Excellent..

Job experiences

1995-1998 Position Engineer - Egyptian/German Railroads Construction Company, Specialist of (Plasser and Theurer) German railroads construction machines (leveling, cross-leveling, lining and tamping) machines.

1998 - 2000 Teaching Assistant - Benha High Institute of Technology, Mechanical Engineering Department, Dynamics and Control.

2001 - 2002 Research Assistant - Denmark Technical University, Mechanical Engineering Construction Department.

2002 - 2007 Assistant Lecturer - Benha High Institute of Technology, Mechanical Engineering Department, Dynamics and Control.

2007 - Lecturer - Benha High Institute of Technology, Mechanical Engineering Department, Dynamics and Control.

Publications

- 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 10th international conference on control, Loughborough University, 9-11 July 2014, UK. Accepted on 14th of March 2014. http://www.wccm-eccm-ecfd2014.org/frontal/default.asp

- E. M. Shaban, **Ayman A. Nada**, "On linearization of nonlinear dynamic systems described by State Dependent Parameter (SDP) discrete-time model", 5th European Conference on Computational Mechanics (ECCM V), ECCOMAS 2014, July, Barcelona, Spain. Accepted on 14th of February 2014. http://www.wccm-eccm-ecfd2014.org/frontal/default.asp
- **Ayman A. Nada**, "Efficient Modeling of Continuum Blades Using ANCF Curved Shell Element", 5th European Conference on Computational Mechanics (ECCM V), ECCOMAS 2014, July, Barcelona, Spain. Accepted on 14th of February 2014. http://www.wccm-eccm-ecfd2014.org/frontal/default.asp
- E. M. Shaban, **Ayman A. Nada**, "The Development of Proportional-Integral-Plus Control Using Field Programmable Gate Array Technology Applied to Mechatronic System",American Journal of Research Communication, Vol. 2(4), ISSN: 2325-4076, 2014. http://www.usa-journals.com/?s=nada
- E. M. Shaban, **Ayman A. Nada**, "Proportional-Integral-Derivative versus Proportional-Integral-Plus Control Applied to Mobile Robotic System", Journal of American Science, Vol. 9(12), pp. 583-591, 2013. http://www.jofamericanscience.org
- Ahmed H. Bayoumy, **Ayman A. Nada**, Said M. Megahed, "Use Of Forward Dynamics Model For Designing Large-Size Wind Turbine Blades", ASME 2013 International Mechanical Engineering Congress and Exposition, Accepted and to be presented in ASME IMECE 2013, SAN DIEGO, USA. http://www.asmeconferences.org/Congress2013/
- Ahmed H. Bayoumy, **Ayman A. Nada**, Said M. Megahed,"A Continuum Based Three-Dimensional Modeling of Wind Turbine Blades", ASME Journal Computational and Nonlinear Dynamics, July 2013, Volume 8, Issue 3, 031004 (14 pages). http://asmedl.org/dbt/dbt.jsp?KEY=JCNDDM&Volume=8&Issue=3
- **Ayman A. Nada**, "Use of B-spline surface to model large-deformation continuum plates: procedure and applications", Nonlinear Dynamics, April 2013, Volume 72, Issue 1-2, pp 243-263. http://rd.springer.com/article/10.1007/s11071-012-0709-3
- Bayoumy, A.H., **Nada, A.A.**, Megahed, S.M. ,"Modeling Slope Discontinuity Of Large Size Wind-Turbine Blade Using Absolute Nodal Coordinate Formulation", Proceedings of the ASME 2012 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (IDETC/CIE 2012), August 12-15, 2012, Chicago, Illinois, USA. http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=1736660
- **Nada, Ayman** and El-Assal, Ahmed, "Absolute nodal coordinate formulation of large-deformation piezoelectric laminated plates", Nonlinear Dynamics: Volume 67, Issue 4 (2012), Page 2441-2454. http://rd.springer.com/article/10.1007/s11071-011-0158-4
- El-Assal, A.M. and **Nada, A. A.**, "A Non-Incremental Finite Element Formulation of Large Deformation Piezoceramic-Laminated-Plates", 1st Joint International Conference on Multibody System Dynamics IMSD 2010, Lappeenranta, Finland. http://developmentcentre.lut.fi/muut/IMSD/

- Megahed, S.M. and **Nada, A. A.**, "Inverse Dynamic Control of Last-Link Flexible Robots Using Multibody System Approach", 1st Joint International Conference on Multibody System Dynamics IMSD 2010, Lappeenranta, Finland. http://developmentcentre.lut.fi/muut/IMSD/
- **Nada, A.A.**, Hussein, B.A., Megahed, S.M., Shabana, A.A., "Use of the floating frame of reference formulation in the large deformation analysis: experimental and numerical validation", Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics, Volume 224, Number 1, 2010. http://pik.sagepub.com/content/224/1/45. **SAGE Best Paper Award Winning Article** (2010). http://pik.sagepub.com/cgi/collection
- **Nada, A.A.**, Hussein, B.A., Megahed, S.M., Shabana, A.A., "Floating Frame Of Reference And Absolute Nodal Coordinate Formulations In The Large Deformation Analysis Of Robotic Manipulators: A Comparative Experimental And Numerical Study", Proceedings of the ASME 2009 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference IDETC/CIE 2009 August 30-September 2, 2009, San Diego, USA. http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=1649700
- Megahed, S. and **Nada, A.**, "Inverse Dynamic Modeling of Robots Using Multibody system Approach", Proceedings of MDP09, Mechanical Design and production Conference, Cairo, 2008.
- S.M.Megahed and **A.A. Nada**, "Dynamic Modeling of a Flexible Cantilever Beam: An Experimental Technique", ASME 2003 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, Volume 5: 19th Biennial Conference on Mechanical Vibration and Noise, Parts A, B, and C, Chicago, Illinois, USA, September $2-6$, 2003. http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=1587686
- Ismail, A.A., El-Betar, A.A., **Nada, A.A.**, "H_∞ Control of Robot Structure Deflection", 7th international conference on production engineering design and control, PEDAC, Alexandria, Egypt, 2001.
- Ismail, A.A., El-Betar, A.A., **Nada, A.A.**, "Modeling and Simulation of Railroads Lining System", 7th international conference on production engineering design and control, PEDAC, Alexandria, Egypt, 2001.
- Ismail, A.A., El-Betar, A.A., **Nada,A.A.**, "Robust H_∞ Control of Railroads Lining System", IFAC SYMPOSIUM, Artificial Intelligence in Real Time Control, AIRTC 2000, October 2-4, 2000, BUDAPEST, HUNGARY. http://conf.uni-obuda.hu/airtc2000/final.htm

On-going Publications

Journal of Multibody Dynamics Megahed, S.M. and **Nada, A. A.**, "Multibody-Based Sliding Mode Control of Wheeled Mobile Robots with Application of Field Programmable Gate Arrays", Journal of Multibody System Dynamics - under MAJOR revision- submitted: 25 May 2013.

Journal of Dynamics and Control Megahed, S.M. and **Nada, A. A.**, "Development and Evaluation of Reconfigurable Proportional-Integral-Plus Control Design for Fast Mechatronic Systems", International Journal of Dynamics and Control - under review- submitted: 23 Feb 2014.

Collaborations

Member, Project title "Active Control of Vibrations in Rotating Flexible Blades", Denmark Technical University (DTU), Denmark, 2002-2004.

Member, Project title "Modelling and Control of Robotic Manipulators with Flexible Links and Joints", US-Egypt Science and Technology Joint Fund Program (National science Foundation)-incorporated with University of Ilion at Chicago, USA. 2003-2007.

Review of international research

Journal of Robotica, Cambridge University press Paper: ROB-REG-08-0125 *Determining maximum load carrying capacity of planar flexible link robot: closed loop approach.*

Journal of Robotica, Cambridge University press Paper: ROB-REG-08-0125R1 *Determining maximum load carrying capacity of planar flexible link robot: closed loop approach.*

Journal of Robotica, Cambridge University press Paper: ROB-REG-10-0033 *A Closed-Form Solution to the Inverse Kinematics Problem for a 5-dof Manipulator.*

Journal of Robotica, Cambridge University press Paper: ROB-REG-12-0219 *Inverse Kinematic Equations of Semi - Flexible Robots Utilizing Neural Network.*

Journal of Franklin Institute Ms.Ref.No.: FI-D-08-00144 *On direct Adaptive Designs for Systems with Exogenous Disturbances - Active Suspension Systems Applications.*

ASME IDTEC-CIE conference Paper: $DETC2009-86433$ *Advanced transfer matrix method of multibody system.*

Mechanics Based Design of Structures and Machines Paper: $LMBD2013-0005$ *AMDM solutions for buckling and vibration response of stepped plates with various elastic boundary conditions.*

Mechanics Based Design of Structures and Machines Paper: $LMBD2013-0014$ *Stability and Non-Stationary Vibrations of Rotor in ElastoViscous Field.*

Mechanics Based Design of Structures and Machines Paper: $LMBD2013-0014R1$ *Stability and Non-Stationary Vibrations of Rotor in ElastoViscous Field.*

International Journal of Dynamics and Control Paper: $IJDY-D-13-00042$ *Flatness control strategy versus classical sliding mode approach: Application on a crane system.*

International Journal of Dynamics and Control Paper: $IJDY-D-13-00042R1$ *Flatness control strategy versus classical sliding mode approach: Application on a crane system.*

International Journal of Dynamics and Control Paper: $IJDY-D-13-00042R1$ *Nonlinear Dynamics and Control of a set of Robots for Hunting and Coverage missions.*

Nonlinear Dynamics Paper: $NODY-D-13-01213$ *Stochastic observer design for Markovian jump Lur'e differential inclusion system with partially unknown transition probabilities.*

Journal of Vibration and Control Paper: $JVC-14-0007$ *Design Optimization, Modeling and Modal Analysis of Composite Wind Turbine Blade.*

Awards

2010 SAGE Award Paper: 224 (K1), 45-58 *Use of the floating frame of reference formulation in large deformation analysis: experimental and numerical validation.*

2004 British Council - Egypt Project Proposal: *Real time control of flexible robotic manipulators.*