CURRICULUM VITAE

Dr. Wallace Moreira Bessa

Address: Federal University of Rio Grande do Norte
Department of Mechanical Engineering
Campus Universitário Lagoa Nova
59078-970, Natal, RN, Brazil

E-mail: wmbessa@ct.ufrn.br

Website: https://roboteam.ct.ufrn.br/wmbessa.html

Languages: Portuguese, English, German

EDUCATION

Doctoral Degree in Mechanical Engineering, D.Sc. 2000–2005
Federal University of Rio de Janeiro (UFRJ, Brazil)
Advisors: Prof. Dr.-Ing. Max Suell Dutra (UFRJ, Brazil)
Prof. Dr.-Ing. Edwin Kreuzer (TU Hamburg, Germany)

Visiting Student Researcher 2002–2003
Hamburg University of Technology (Germany)
Supervisor: Prof. Dr.-Ing. Edwin Kreuzer

Master's Degree in Mechanical Engineering, M.Sc. 1998–2000
Military Institute of Engineering (IME, Brazil)
Advisor: Prof. Dr. Fernando Ribeiro da Silva

Mechanical Engineering Degree, B.Sc. 1993–1997
Rio de Janeiro State University (UERJ, Brazil)
Advisor: Prof. Dr. Francisco José da Cunha Pires Soeiro

ACADEMIC POSITIONS

Associate Professor since 2013
Department of Mechanical Engineering
Federal University of Rio Grande do Norte (UFRN, Brazil)
Activities:

- Leading Robotics and Machine Learning Research Group
- Taking charge of academic administration
- Advising and mentoring students (doctoral, master's, and undergraduate)
- Lecturing in both graduate and undergraduate programs
  - Mechanical Engineering Undergraduate Program
  - Mechanical Engineering Graduate Program
  - Mechatronics Engineering Graduate Program
  - Electrical and Computer Engineering Graduate Program

Research Fellow since 2011
Brazilian National Research Council (CNPq, Brazil)
Activities:

- Leading research projects

Visiting Professor 2015–2017
Institute of Mechanics and Ocean Engineering July 2014
Hamburg University of Technology (TU Hamburg, Germany) June 2013
Activities: April 2011

- Leading a research project on the intelligent control of mechatronic systems
- Collaborating with research staff and co-advising master's students
- Presenting seminars

Assistant Professor 2008–2013
Department of Mechanical Engineering
Federal University of Rio Grande do Norte (UFRN, Brazil)
Activities: Same as in Associate Professor position above

Assistant Professor 2004–2008
Federal Center for Technological Education (CEFET/RJ, Brazil)
Activities: Same as in Lecturer position below, plus
- Taking charge of academic administration
- Pursuing independent research agenda
- Advising and mentoring undergraduate students

Teaching assistantship

Undergraduate Teaching Assistant 1997
Machine Elements II (Undergraduate Course)
Rio de Janeiro State University (UERJ, Brazil)
Activities:
- Assisting the course instructor with class preparation and course materials
- Assisting students outside of class time

Non-academic positions

Mechanical Engineer From Jan. 1998
MTL Engenharia Ltda. (Brazil) to Aug. 2001
Activities:
- Analysis of noise levels in offshore installations
- Numerical simulation of deluge networks in offshore installations

Fellowships and awards

CNPq (Brazilian National Research Council) Research Fellowship 2018–2021

Alexander von Humboldt Research Fellowship for Experienced Researchers 2015–2017

CNPq (Brazilian National Research Council) Research Fellowship 2014–2017

CNPq (Brazilian National Research Council) Research Fellowship 2011–2014

Scholarships

Scholarship for Graduate Studies, awarded by the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES) 2003–2004

Scholarship for Graduate Studies in Germany, awarded by both German Academic Exchange Service (DAAD) and Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES) 2002–2003

Scholarship for Intensive German Course in Germany, awarded by the German Academic Exchange Service (DAAD) 2001–2002

Scholarship for Graduate Studies, awarded by the Brazilian Coordination for the Improvement of Higher Education Personnel (CAPES) 2000-2001

Scholarship for Graduate Studies, awarded by the Brazilian National Research Council 1998-2000

Editorial board

Journal of the Brazilian Society of Mechanical Sciences and Engineering (Springer) since 2018
Associate Editor for Dynamics, Vibrations, and Acoustics

CONFERENCE ORGANIZATION

Member of the Scientific Committee	ICoEV 2020 – International Conference on Engineering Vibration Postponed to August 2022, Aberdeen, United Kingdom
Chairman	DINAME 2019 – International Symposium on Dynamic Problems of Mechanics March 10-15, 2019, Búzios, Brazil
Member of the Scientific Comittee	Industry 4.0: Challenges and perspectives April 10, 2018, Natal, Brazil
Member of the Scientific Committee	DINAME 2017 – International Symposium on Dynamic Problems of Mechanics March 05-10, 2017, São Sebastião, Brazil
Chairman	DINAME 2015 – International Symposium on Dynamic Problems of Mechanics February 22-27, 2015, Natal, Brazil
Member of the Scientific Committee	COBEM 2011 – International Congress of Mechanical Engineering October 24-28, 2011, Natal, Brazil

JOURNAL REVIEWING (SELECTED)

Robotics and Mechatronics	IEEE/ASME Transactions on Mechatronics, Robotics and Autonomous Systems, Robotics and Computer-Integrated Manufacturing, Journal of Intelligent & Robotic Systems, IEEE Transactions on Industrial Electronics
Artificial Intelligence	IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Fuzzy Systems, IEEE Transactions on Cybernetics, Neural Computing & Applications, Applied Soft Computing, Expert Systems, International Journal of Fuzzy Systems, Neurocomputing
Control and Automation	International Journal of Robust and Nonlinear Control, Control and Intelligent Systems, International Journal of Dynamics and Control, International Journal of Automation and Computing, Journal of Control, Automation, and Electrical Systems
Mechanical Sciences	Nonlinear Dynamics, Journal of Vibration and Control, Multibody System Dynamics, Mechanics Based Design of Structures and Machines, Journal of Sound and Vibration, Shock and Vibration

RESEARCH COLLABORATIONS (SELECTED)

Prof. Dr. Sebastian Trimpe — since 2017
Head of the Institute for Data Science in Mechanical Engineering
RWTH Aachen University (Germany)

Prof. Dr.-Ing. Robert Seifried — since 2015
Head of the Institute of Mechanics and Ocean Engineering
Hamburg University of Technology (Germany)

Prof. Dr. Marcelo A. Savi — since 2007
Head of the Center for Nonlinear Mechanics -
Federal University of Rio de Janeiro (Brazil)

Prof. Dr.-Ing. Edwin Kreuzer — since 2002
President of the Academy of Sciences and Humanities in Hamburg (Germany)

PROGRAMMING SKILLS

I am proficient in C/C++ and familiar with Python, Linux Shell Script, Fortran, Octave, and MATLAB.

PUBLICATIONS

SELECTED PUBLICATIONS

These five publications were selected in order to provide glimpses of the present status of my research and networking.

[1] G. S. Lima, S. Trimpe, **W. M. Bessa**, Sliding Mode Control with Gaussian Process Regression for Underwater Robots, Journal of Intelligent & Robotic Systems 99, 487-498, 2020.

[2] **W. M. Bessa**, S. Otto, E. Kreuzer, R. Seifried, An adaptive fuzzy sliding mode controller for uncertain underactuated mechanical systems. Journal of Vibration and Control 25(9), 1521-1535, 2019.

[3] J. D. B. Dos Santos, **W. M. Bessa**, Intelligent control for accurate position tracking of electrohydraulic actuators. Electronics Letters 55(2), 78-80, 2019.

[4] G. Brinkmann, **W. M. Bessa**, D. A. Duecker, E. Kreuzer, E. Solowjow. Reinforcement Learning of Depth Stabilization with a Micro Diving Agent. In: ICRA 2018 – IEEE International Conference on Robotics and Automation, 2018, Brisbane. Proceedings of the IEEE International Conference on Robotics and Automation, 2018.

[5] **W. M. Bessa**, E. Kreuzer, J. Lange, M.-A. Pick, E. Solowjow, Design and Adaptive Depth Control of a Micro Diving Agent, IEEE Robotics and Automation Letters 2(4) 1871-1877, 2017.

MOST CITED PUBLICATIONS[1]

Publication	*Google Scholar*	*Scopus/Elsevier*
[1] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, Depth control of remotely operated underwater vehicles using an adaptive fuzzy sliding mode controller. Robotics and Autonomous Systems 56(8) 670-677, 2008.	205	146
[2] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, An adaptive fuzzy sliding mode controller for remotely operated underwater vehicles, Robotics and Autonomous Systems 58(1) 16-26, 2010.	144	109
[3] W. M. Bessa, M. S. Dutra, E. Kreuzer, Sliding Mode Control with Adaptive Fuzzy Dead-Zone Compensation of an Electro-hydraulic Servo-System, Journal of Intelligent & Robotic Systems. 58, 3-16, 2010.	97	75

COMPLETE LIST OF PUBLICATIONS

Journal articles

[1] G. S. Lima, S. Trimpe, **W. M. Bessa**, Sliding Mode Control with Gaussian Process Regression for Underwater Robots, Journal of Intelligent & Robotic Systems 99, 487-498, 2020.

[2] P. E. de Medeiros, M. A. Savi, **W. M. Bessa**, Proportional-Derivative Fuzzy Compensation of Uncertainties in the Control of Shape Memory Trusses Vibration (in Portuguese), Brazilian Applied Science Review 4(3), 1370-1385, 2020.

[3] G. S. Lima, **W. M. Bessa**, Sliding Mode Control of an Electric-Hydraulic Actuator with Gaussian Process Compensation (in Portuguese), Brazilian Applied Science Review 4(3), 1508-1522, 2020.

[4] L. S. Cadengue, S. A. Fidelis, G. S. Lima, **W. M. Bessa**, Feedback linearization and reinforcement learning for controlling the positioning system of a ROV (in Portuguese), Brazilian Applied Science Review 4(3), 1523-1534, 2020.

1 Number of citations in 20 August 2020

[5] **W. M. Bessa**, S. Otto, E. Kreuzer, R. Seifried, An adaptive fuzzy sliding mode controller for uncertain underactuated mechanical systems. Journal of Vibration and Control 25(9), 1521-1535, 2019.

[6] J. D. B. Dos Santos, **W. M. Bessa**, Intelligent control for accurate position tracking of electrohydraulic actuators. Electronics Letters 55(2), 78-80, 2019.

[7] **W. M. Bessa**, G. Brinkmann, D. A. Duecker, E. Kreuzer, E. Solowjow, A Biologically Inspired Framework for the Intelligent Control of Mechatronic Systems and Its Application to a Micro Diving Agent. Mathematical Problems in Engineering, DOI: 10.1155/2018/9648126, 2018.

[8] **W. M. Bessa**, E. Kreuzer, J. Lange, M.-A. Pick, E. Solowjow, Design and Adaptive Depth Control of a Micro Diving Agent. IEEE Robotics and Automation Letters 2(4) 1871-1877, 2017.

[9] **W. M. Bessa**, E. Kreuzer, Adaptive fuzzy sliding mode control of the cart-pole underactuated system, Proceedings in Applied Mathematics and Mechanics, 16, p. 799-800, 2016.

[10] **W. M. Bessa**, E. Kreuzer, L. Krumm, M.-A. Pick, E. Solowjow, Adaptive Fuzzy Sliding Mode Controller and Observer for a Dive Cell, Proceedings in Applied Mathematics and Mechanics, v. 15, p. 263-264, 2015.

[11] **W. M. Bessa**, A. S. de Paula, M. A. Savi, Adaptive fuzzy sliding mode control of a chaotic pendulum with noisy signals, Zeitschrift fur Angewandte Mathematik und Mechanik 94(3) 256-263, 2014.

[12] A. S. de Paula, M. V. S. dos Santos, M. A. Savi, **W. M. Bessa**, Controlling a Shape Memory Alloy Two-Bar Truss Using Delayed Feedback Method, International Journal of Structural Stability and Dynamics, 1440032, DOI: 10.1142/s021945541440032x, 2014.

[13] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, Dynamic Positioning of Underwater Robotic Vehicles with Thruster Dynamics Compensation, International Journal of Advanced Robotic Systems 10(9) DOI: 10.5772/56601, 2013.

[14] M. C. Tanaka, J. M. M. Fernandes, **W. M. Bessa**, Feedback Linearization with Fuzzy Compensation for Uncertain Nonlinear Systems, International Journal of Computers, Communications & Control 8(5) 736-743, 2013.

[15] **W. M. Bessa**, A. S. de Paula, M. A. Savi, Adaptive fuzzy sliding mode control of smart structures. The European Physical Journal - Special Topics 222, 1541-1551, 2013.

[16] **W. M. Bessa**, A. S. de Paula, M. A. Savi, Sliding mode control with adaptive fuzzy dead-zone compensation for uncertain chaotic systems, Nonlinear Dynamics 70(3) 1989-2001, 2012.

[17] **W. M. Bessa**, E. Kreuzer, Sliding Mode Control of a Remotely Operated Underwater Vehicle with Adaptive Fuzzy Dead-Zone Compensation, Proceedings in Applied Mathematics and Mechanics, v. 11, p. 803-804, 2011.

[18] **W. M. Bessa**, R. S. S. Barrêto, Adaptive fuzzy sliding mode control of uncertain nonlinear systems, Controle & Automação 21(2) 117-126, 2010.

[19] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, An adaptive fuzzy dead-zone compensation scheme and its application to electro-hydraulic system, Journal of the Brazilian Society of Mechanical Sciences and Engineering 32(1) 1-7, 2010.

[20] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, An adaptive fuzzy sliding mode controller for remotely operated underwater vehicles, Robotics and Autonomous Systems 58(1) 16-26, 2010.

[21] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, Sliding Mode Control with Adaptive Fuzzy Dead-Zone Compensation of an Electro-hydraulic Servo-System, Journal of Intelligent & Robotic Systems. 58, 3-16, 2010.

[22] **W. M. Bessa**. Some remarks on the boundedness and convergence properties of smooth sliding mode controllers, International Journal of Automation and Computing 6(2) 154-158, 2009.

[23] **W. M. Bessa**, A. S. de Paula, M. A. Savi, Chaos control using an adaptive fuzzy sliding mode controller with application to a nonlinear pendulum, Chaos Solitons & Fractals 42(2) 784-791, 2009.

[24] **W. M. Bessa**, M. S. Dutra, E. Kreuzer, Depth control of remotely operated underwater vehicles using an adaptive fuzzy sliding mode controller. Robotics and Autonomous Systems 56(8) 670-677, 2008.

Book chapters

[25] J. L. M. de Lima; G. O. A. Azevedo; J. D. B. dos Santos; **W. M. Bessa**. Avaliação experimental de um controlador fuzzy aplicado a um sistema eletro-hidráulico. In: Alfaro, S. C. A.; Caurin, G. A. P.; Valdiero, A. C.; Gonçalves, R. S.; De Negri, V. J.; Ledezma, J. A.. (Org.). ABCM Symposium Series Mechatronics. 1ed.Rio de Janeiro: ABCM, 2014, v. 6, p. 1244-1251.

[26] J. M. M. Fernandes; M. C. Tanaka;R. C. S. Freire Júnior; **W. M. Bessa**. Feedback Linearization with a Neural Network Based Compensation Scheme. In: Hujun Yin; José A.F. Costa; Guilherme Barreto. (Org.). Lecture Notes in Computer Science. 1ed.Heidelberg: Springer-Verlag, 2012, v. 7435, p. 594-601.

[27] M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Utilização da lógica fuzzy no posicionamento dinâmico de um veículo robótico submarino. In: B. Bedregal; J. Marcos; L. C. de Barros; J. A. F. Roveda; R. H. N. Santiago; W. Seixas. (Org.). Recentes Avanços em Sistemas Fuzzy. 1ed.Natal: SBMAC, 2012, v. , p. 1099-1109.

[28] M. C. Tanaka; J. M. M. Fernandes; A. W. Mackenzie; **W. M. Bessa**. Feedback linearization with fuzzy compensation for electro-hydraulic actuated systems. In: Sadek Crisostomo Absi Alfaro, José Maurício S T Motta, Victor Juliano De Negri. (Org.). ABCM Symposium Series Mechatronics. 1ed.Rio de Janeiro: ABCM, 2012, v. 5, p. 437-446.

[29] J. M. M. Fernandes; M. C. Tanaka;R. C. S. Freire Júnior; **W. M. Bessa**. A neural network based controller for underwater robotic vehicles. In: Sadek Crisostomo Absi Alfaro, José Maurício S T Motta, Victor Juliano De Negri. (Org.). ABCM Symposium Series Mechatronics. 1ed.Rio de Janeiro: ABCM, 2012, v. 5, p. 455-464.

[30] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Thruster Dynamics Compensation for the Positioning of Underwater Robotic Vehicles Through a Fuzzy Sliding Mode Based Approach. In: Paulo Eigi Miyagi; Oswaldo Horikawa; Emília Villani. (Org.). ABCM Symposium Series in Mechatronics. Rio de Janeiro: ABCM, 2006, v. 2, p. 605-612.

Peer-reviewed conference papers

[31] A. R. L. Zachi; C. A. M. Correia; J. A. Gouvea; **W. M. Bessa**. Trajectory Tracking Control Applied to an Electro-Hydraulic Actuator With Uncertain Parameters. In: DINAME 2019 - XVIII International Symposium on Dynamic Problems of Mechanics, 2019, Armação de Búzios. Proceedings of the XVIII International Symposium on Dynamic Problems of Mechanics, 2019.

[32] G. A. B. Baumann; G. S. Lima; **W. M. Bessa**. Trajectory tracking control of a seesaw-propeller system using a feedback-feedforward approach and artificial neural network. In: DINAME 2019 - XVIII International Symposium on Dynamic Problems of Mechanics, 2019, Armação de Búzios. Proceedings of the XVIII International Symposium on Dynamic Problems of Mechanics, 2019.

[33] G. S. Lima; D. R. Porto; **W. M. Bessa**; S. Trimpe. Position Stabilization Control of Flexible Joint Manipulator using Feedback Linearization and Gaussian Process Regression. In: DINAME 2019 - XVIII International Symposium on Dynamic Problems of Mechanics, 2019, Armação de Búzios. Proceedings of the XVIII International Symposium on Dynamic Problems of Mechanics, 2019.

[34] D. C. X. F. Barros; G. S. Lima; **W. M. Bessa**. Feedback Linearization and Supervisioned Neural Networks for the Depth Control of a ROV. In: DINAME 2019 - XVIII International Symposium on Dynamic Problems of Mechanics, 2019, Armação de Búzios. Proceedings of the XVIII International Symposium on Dynamic Problems of Mechanics, 2019.

[35] G. S. Lima; **W. M. Bessa**. Controle por Modos Deslizantes de um Atuador Eletro-hidráulico com Compensação por Processo Gaussiano. In: SBAI 2019 - 14º Simpósio Brasileiro de Automação Inteligente, 2019, Ouro Preto. Anais do 14º Simpósio Brasileiro de Automação Inteligente, 2019.

[36] P. E. de Medeiros; M. A. Savi ; **W. M. Bessa**. Compensação Fuzzy Proporcional-Derivativa de Incertezas no Controle de Vibrações de Treliças com Memória de Forma. In: SBAI 2019 - 14º Simpósio Brasileiro de Automação Inteligente, 2019, Ouro Preto. Anais do 14º Simpósio Brasileiro de Automação Inteligente, 2019.

[37] L. S. Cadengue; S. A. Amico; G. S. Lima; **W. M. Bessa**. Linearização por realimentação e aprendizagem por reforço para o controle do sistema de posicionamento do ROV. In: SBAI 2019 -

14º Simpósio Brasileiro de Automação Inteligente, 2019, Ouro Preto. Anais do 14º Simpósio Brasileiro de Automação Inteligente, 2019.

[38] G. A. B. Baumann; G. S. Lima; **W. M. Bessa**. Sliding modes control of an electrohydraulic actuator using compensation by Gaussian process. In: COBEM 2019 - 25th International Congress of Mechanical Engineering, 2019, Uberlândia. Proceedings of the 25th International Congress of Mechanical Engineering, 2019.

[39] G. S. Lima; **W. M. Bessa**. Control of flexible joint manipulator with feedback linearization and compensation by Gaussian process. In: COBEM 2019 - 25th International Congress of Mechanical Engineering, 2019, Uberlândia. Proceedings of the 25th International Congress of Mechanical Engineering, 2019.

[40] L. S. Cadengue; G. S. Lima; **W. M. Bessa**. Linearização por Realimentação e compensador UCB para o controle de profundidade do ROV. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[41] G. A. B. Baumann; G. S. Lima; V. R. F. Moreira; V. V. Pereira; **W. M. Bessa**. Abordagem Experimental de um Controlador Feedback Feedforward com Rede Neural Artificial para Mecanismo Pêndulo-Propulsor. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[42] Barros, D. C. X. F. ; G. A. B. Baumann; G. S. Lima; V. V. Pereira; **W. M. Bessa**. Controle Fuzzy de um Atuador Eletro-Hidráulico usando Variável de Erro Combinado. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[43] G. S. Lima; **W. M. Bessa**. Controle por Modos Deslizantes de sistemas mecânicos subatuados com compensação por Processo Gaussiano. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[44] G. A. B. Baumann; G. S. Lima; **W. M. Bessa**. Controle Inteligente de um Manipulador Robótico com Regressão por Processo Gaussiano. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[45] J. L. C. B. Farias; G. S. Lima; **W. M. Bessa**. Controle de um Manipulador Flexível utilizando Modos Deslizantes e Redes Neurais Artificiais. In: DINCON 2019 - XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019, São Carlos. Anais da XIV Conferência Brasileira de Dinâmica, Controle e Aplicações, 2019.

[46] D. R. Porto; G. S. Lima; **W. M. Bessa**. Angular Position Control of Furuta Pendulum with an Intelligent Sliding Modes Approach. In: DINAME 2019 - XVIII International Symposium on Dynamic Problems of Mechanics, 2019, Armação de Búzios. Proceedings of the XVIII International Symposium on Dynamic Problems of Mechanics, 2019.

[47] G. Brinkmann, **W. M. Bessa**, D. A. Duecker, E. Kreuzer, E. Solowjow. Reinforcement Learning of Depth Stabilization with a Micro Diving Agent. In: ICRA 2018 – IEEE International Conference on Robotics and Automation, 2018, Brisbane. Proceedings of the IEEE International Conference on Robotics and Automation, 2018.

[48] G. S. Lima; D. R. Porto; A. J. Oliveira; **W. M. Bessa**. Comparação de extensômetros e acelerômetros para medição de vibração em vigas flexíveis sujeitas a perturbação externa. In: CONEM 2018 - X Congresso Nacional de Engenharia Mecânica, 2018, Salvador. Anais do X Congresso Nacional de Engenharia Mecânica, 2018.

[49] **W. M. Bessa**; E. Kreuzer. An intelligent sliding mode controller for underactuated mechanical systems. In: XXII Congresso Brasileiro de Automática, 2018, João Pessoa. Anais do XXII Congresso Brasileiro de Automática, 2018.

[50] G. S. Lima; **W. M. Bessa**; S. Trimpe. Depth Control of Underwater Robots Using Sliding Modes and Gaussian Process Regression. In: 2018 Latin American Robotic Symposium, 2018 Brazilian

Symposium on Robotics (SBR) and 2018 Workshop on Robotics in Education (WRE), 2018, João Pessoa. 2018 Latin American Robotic Symposium, 2018 Brazilian Symposium on Robotics (SBR) and 2018 Workshop on Robotics in Education (WRE), 2018.

[51] **W. M. Bessa**; S. Otto; E. Kreuzer; R. Seifried. Intelligent Sliding Mode Control of an Overhead Container Crane. In: 8th ECCOMAS Thematic Conference on Multibody Dynamics, 2017, Prague. Proceedings of the 8th ECCOMAS Thematic Conference on Multibody Dynamics, 2017.

[52] J. M. M. Fernandes; M. C. Tanaka; **W. M. Bessa**; E. Kreuzer. An intelligent controller for underactuated mechanical systems. In: DINAME 2017 - 17th International Symposium on Dynamic Problems of Mechanics, 2017, São Sebastião. Proceedings of the 17th International Symposium on Dynamic Problems of Mechanics, 2017.

[53] P. E. Medeiros; **W. M. Bessa**; M. A. Savi; A. S. de Paula. Vibration control of smart structures with a fuzzy sliding mode control scheme. In: COBEM 2017 - 24th International Congress of Mechanical Engineering, 2017, Curitiba. Proceedings of the 24th International Congress of Mechanical Engineering, 2017.

[54] A. R. L. Zachi; C. A. M. Correia; J. A. Gouvea; **W. M. Bessa**. Robust output feedback control of an electro-hydraulic actuator with uncertain parameters. In: COBEM 2017 - 24th International Congress of Mechanical Engineering, 2017, Curitiba. Proceedings of the 24th International Congress of Mechanical Engineering, 2017.

[55] L. L. Vignoli; F. R. Freitas Neto; M. A. Savi; **W. M. Bessa**. Nonlinear dynamics and chaos of a SMA-hybrid composite oscillator. In: COBEM 2017 - 24th International Congress of Mechanical Engineering, 2017, Curitiba. Proceedings of the 24th International Congress of Mechanical Engineering, 2017.

[56] J. G. B. Farias Filho; C. E. T. Dorea; **W. M. Bessa**; J. L. C. B. Farias. Modeling, Test Benches and Identification of a Quadcopter. In: 2016 XIII Latin American Robotics Symposium and IV Brazilian Robotics Symposium (LARS/SBR), 2016, Recife. 2016 XIII Latin American Robotics Symposium and IV Brazilian Robotics Symposium (LARS/SBR), 2016.

[57] M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Fuzzy Feedback Linearization with Applications to the Control of Mechanical Systems. In: DINAME 2015 - 16th International Symposium on Dynamic Problems of Mechanics, 2015, Natal. Proceedings of the 16th International Symposium on Dynamic Problems of Mechanics, 2015.

[58] P. E. Medeiros; **W. M. Bessa**; M. A. Savi; A. S. de Paula. Sliding modecontrol of a pseudoelastic two-bar truss. In: COBEM 2015 - 23rd International Congress of Mechanical Engineering, 2015, Rio de Janeiro. Proceedings of the 23rd International Congress of Mechanical Engineering, 2015.

[59] **W. M. Bessa**; A. Hackbarth; E. Kreuzer; C. Radisch. State and Parameter Estimation of an Electro-Hydraulic Servo System. In: ENOC 2014 - 8th European Nonlinear Dynamics Conference, 2014, Viena. Proceedings of the 8th European Nonlinear Dynamics Conference, 2014.

[60] R. V. A. Heroncio; J. D. B. dos Santos; **W. M. Bessa**; A. S. de Paula; M. A. Savi. A fuzzy feedback linearization scheme applied to vibration control of a smart structure. In: CONEM 2014 - VIII Congresso Nacional de Engenharia Mecânica, 2014, Uberlândia. Anais do VIII Congresso Nacional de Engenharia Mecânica, 2014.

[61] J. L. M. de Lima; G. O. A. Azevedo; J. D. B. dos Santos; **W. M. Bessa**. Avaliação experimental de um controlador fuzzy aplicado a um sistema eletro-hidráulico. In: CONEM 2014 - VIII Congresso Nacional de Engenharia Mecânica, 2014, Uberlândia. Anais do VIII Congresso Nacional de Engenharia Mecânica, 2014.

[62] **W. M. Bessa**; J. M. M. Fernandes; E. Kreuzer. Controle por modos deslizantes de vibrações stick-slip em colunas de perfuração. In: CONEM 2014 - VIII Congresso Nacional de Engenharia Mecânica, 2014, Uberlândia. Anais do VIII Congresso Nacional de Engenharia Mecânica, 2014.

[63] M. C. Tanaka; **W. M. Bessa**; C. Radisch; E. Kreuzer. Controle inteligente de oscilações em procedimento de transferência de carga utilizando lógica fuzzy. In: CONEM 2014 - VIII Congresso Nacional de Engenharia Mecânica, 2014, Uberlândia. Anais do VIII Congresso Nacional de Engenharia Mecânica, 2014.

[64] J. M. M. Fernandes; M. C. Tanaka; **W. M. Bessa**. Sliding mode control with a neural network compensation scheme for electro-hydraulic systems. In: DINAME 2013 - XV International Symposium on Dynamic Problems of Mechanics, 2013, Armação de Búzios. Proceedings of the XV International Symposium on Dynamic Problems of Mechanics, 2013.

[65] A. S. de Paula; M. V. S. Santos; M. A. Savi; **W. M. Bessa**. Shape memory alloy two-bar truss control using time-delayed feedback method. In: ICEDyn 2013 - International Conference on Structural Engineering Dynamics, 2013, Sesimbra. Proceedings of the International Conference on Structural Engineering Dynamics, 2013.

[66] J. M. M. Fernandes; M. C. Tanaka;R. C. S. Freire Júnior; **W. M. Bessa**. Feedback Linearization with a Neural Network Based Compensation Scheme. In: IDEAL 2012 - 13th International Conference on Intelligent Data Engineering and Automated Learning, 2012, Natal. Proceedings of the 13th International Conference on Intelligent Data Engineering and Automated Learning. Heidelberg: Springer-Verlag, 2012. p. 594-601.

[67] J. D. B. dos Santos; H. B. da Rocha; **W. M. Bessa**. Controle adaptativo de sistemas não lineares utilizando Adaline. In: CONEM 2012 - VII Congresso Nacional de Engenharia Mecânica, 2012, São Luís. Anais do VII Congresso Nacional de Engenharia Mecânica, 2012.

[68] J. M. M. Fernandes; M. C. Tanaka;R. C. S. Freire Júnior; **W. M. Bessa**. Controle de um sistema eletroidráulico baseado em redes neurais artificiais. In: CONEM 2012 - VII Congresso Nacional de Engenharia Mecânica, 2012, São Luís. Anais do VII Congresso Nacional de Engenharia Mecânica, 2012.

[69] P. E. Medeiros;G. K. Aoyama; I. G. Rebouças; **W. M. Bessa**. Modelagem e simulação computacional da dinâmica de um motor stirling com abordagem matricial. In: CONEM 2012 - VII Congresso Nacional de Engenharia Mecânica, 2012, São Luís. Anais do VII Congresso Nacional de Engenharia Mecânica, 2012.

[70] G. F. S. Rebouças; **W. M. Bessa**; M. A. Savi. Estabilização de órbitas periódicas instáveis em junções Josephson. In: CONEM 2012 - VII Congresso Nacional de Engenharia Mecânica, 2012, São Luís. Anais do VII Congresso Nacional de Engenharia Mecânica, 2012.

[71] M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Utilização da lógica fuzzy no posicionamento dinâmico de um veículo robótico submarino. In: II CBSF - Segundo Congresso Brasileiro de Sistemas Fuzzy, 2012, Natal. Anais do Segundo Congresso Brasileiro de Sistemas Fuzzy, 2012.

[72] G. F. S. Rebouças; **W. M. Bessa**. Investigação numérica do comportamento caótico em junções Josephson. In: CMAC-Nordeste 2012 - Congresso de Matemática Aplicada e Computacional, 2012, Natal. Anais do Congresso de Matemática Aplicada e Computacional, 2012.

[73] Rocha, F. F. ; **W. M. Bessa**. Cinemática de um manipulador robótico utilizando uma abordagem computacional. In: CMAC-Nordeste 2012 - Congresso de Matemática Aplicada e Computacional, 2012, Natal. Anais do Congresso de Matemática Aplicada e Computacional, 2012.

[74] **W. M. Bessa**; A. S. de Paula; M. A. Savi. Sliding mode control with adaptive fuzzy dead-zone dompensation for uncertain nonlinear systems. In: DINAME 2011 - XIV International Symposium on Dynamic Problems of Mechanics, 2011, São Sebastião. Proceedings of the XIV International Symposium on Dynamic Problems of Mechanics, 2011.

[75] M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Feedback linearization with a fuzzy compensation scheme. In: DINCON'2011 - X Conferência Brasileira de Dinâmica, Controle e Aplicações, 2011, Águas de Lindóia. Anais da X Conferência Brasileira de Dinâmica, Controle e Aplicações, 2011. v. 10. p. 680-682.

[76] M. C. Tanaka; J. M. M. Fernandes; A. W. Mackenzie; **W. M. Bessa**. Feedback linearization with fuzzy compensation for electro-hydraulic actuated systems. In: COBEM 2011 - 21st Congress of Mechanical Engineering, 2011, Natal. Proceedings of the 21st Congress of Mechanical Engineering, 2011.

[77] J. M. M. Fernandes; M. C. Tanaka;R. C. S. Freire Júnior; **W. M. Bessa**. A neural network based controller for underwater robotic vehicles. In: COBEM 2011 - 21st Congress of Mechanical Engineering, 2011, Natal. Proceedings of the 21st Congress of Mechanical Engineering, 2011.

[78] J. D. B. dos Santos; H. B. da Rocha; M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Controle adaptativo de um sistema eletroidráulico utilizando rede neural ADALINE. In: II ERMAC R4 - 2º Encontro Regional de Matemática Aplicada e Computacional, 2011, Vitória da Conquista. Anais do 2º Encontro Regional de Matemática Aplicada e Computacional, 2011.

[79] J. D. B. dos Santos; H. B. da Rocha; M. C. Tanaka; J. M. M. Fernandes; **W. M. Bessa**. Controle adaptativo do oscilador de Van der Pol utilizando rede neural ADALINE. In: II ERMAC R4 - 2º Encontro Regional de Matemática Aplicada e Computacional, 2011, Vitória da Conquista. Anais do 2º Encontro Regional de Matemática Aplicada e Computacional, 2011.

[80] **W. M. Bessa**. An adaptive fuzzy sliding mode controller for nonlinear systems with non-symmetric dead-zone and its application to an electro-hydraulic system. In: CONEM 2010 - VI Congresso Nacional de Engenharia Mecânica, 2010, Campina Grande. Anais do VI Congresso Nacional de Engenharia Mecânica, 2010.

[81] **W. M. Bessa**; A. S. de Paula; M. A. Savi. Adaptive fuzzy sliding mode control with application to a chaotic pendulum. In: CONEM 2010 - VI Congresso Nacional de Engenharia Mecânica, 2010, Campina Grande. Anais do VI Congresso Nacional de Engenharia Mecânica, 2010.

[82] **W. M. Bessa**; A. S. de Paula; M. A. Savi. An adaptive fuzzy sliding mode controller and its application to a chaotic pendulum. In: PACAM XI - 11th Pan-American Congress of Applied Mechanics, 2010, Foz do Iguaçu. Proceedings of the 11th Pan-American Congress of Applied Mechanics, 2010.

[83] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Adaptive fuzzy sliding mode control of electro-hydraulic servo-systems. In: DINAME 2009 - XIII International Symposium on Dynamic Problems of Mechanics, 2009, Angra dos Reis. Proceedings of the XIII International Symposium on Dynamic Problems of Mechanics, 2009.

[84] **W. M. Bessa**; A. S. de Paula; M. A. Savi. Adaptive fuzzy sliding mode control of a chaotic pendulum considering noisy input signals. In: COBEM 2009 - 20th Congress of Mechanical Engineering, 2009, Gramado. Proceedings of the 20th Congress of Mechanical Engineering, 2009.

[85] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Sliding mode control of an underwater robotic vehicle including adaptive fuzzy dead-zone compensation. In: COBEM 2009 - 20th Congress of Mechanical Engineering, 2009, Gramado. Proceedings of the 20th Congress of Mechanical Engineering, 2009.

[86] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. An Adaptive Fuzzy Dead-Zone Compensation Scheme for Nonlinear Systems. In: CONEM 2008 - V Congresso Nacional de Engenharia Mecânica, 2008, Salvador. Anais do V Congresso Nacional de Engenharia Mecânica, 2008.

[87] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Adaptive Fuzzy Sliding Mode Control of Uncertain Nonlinear Systems with Non-Symmetric Dead-Zone. In: CBA 2008 - XVII Congresso Brasileiro de Automática, 2008, Juiz de Fora. Anais do XVII Congresso Brasileiro de Automática, 2008.

[88] **W. M. Bessa**; A. S. de Paula; M. A. Savi. Controlling Chaos in a Nonlinear Pendulum Using an Adaptive Fuzzy Sliding Mode Controller. In: CBA 2008 - XVII Congresso Brasileiro de Automática, 2008, Juiz de Fora. Anais do XVII Congresso Brasileiro de Automática, 2008.

[89] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Adaptive Fuzzy Sliding Mode Control and Its Application to Underwater Robotic Vehicles. In: VIII ERMAC R3 - 8º Encontro Regional de Matemática Aplicada e Computacional, 2008, Natal. Anais do 8º Encontro Regional de Matemática Aplicada e Computacional, 2008.

[90] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Adaptive Fuzzy Sliding Mode Control of Underwater Robotic Vehicles. In: DINAME 2007 - XII International Symposium on Dynamic Problems of Mechanics, 2007, Ilhabela. Proceedings of the XII International Symposium on Dynamic Problems of Mechanics, 2007.

[91] A. S. de Paula; M. A. Savi; **W. M. Bessa**. Chaos Control in a Nonlinear Pendulum Through an Adaptive Fuzzy Sliding Mode Based Approach. In: COBEM 2007 - 19th Congress of Mechanical Engineering, 2007, Brasília. Proceedings of the 19th Congress of Mechanical Engineering, 2007.

[92] **W. M. Bessa**; A. S. de Paula; M. A. Savi. An Adaptive Fuzzy Sliding Mode Controller Applied to a Chaotic Pendulum. In: Physcon 2007 - 3rd International IEEE Scientific Conference on Physics and

Control, 2007, Potsdam. Proceedings of the 3rd International IEEE Scientific Conference on Physics and Control, 2007.

[93] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Robust Depth Control of Remotely Operated Vehicles with an Adaptive Fuzzy Approach to Uncertainty/Disturbance Compensation. In: DINCON'2006 - 5th Brazilian Conference on Dynamics, Control and Their Applications, 2006, Guarantinguetá. Proceedings of the 5th Brazilian Conference on Dynamics, Control and Their Applications, 2006.

[94] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Adaptive Fuzzy Control of Electrohydraulic Servosystems. In: CONEM 2006 - IV Congresso Nacional de Engenharia Mecânica, 2006, Recife. Anais do IV Congresso Nacional de Engenharia Mecânica, 2006.

[95] M. O. Pinho; **W. M. Bessa**; D. Portes Júnior; H. Rodrigues. Formulação Lagrangeana para a Discretização das Equações da Hidrodinamica. In: EMC 2006 - IX Encontro de Modelagem Computacional, 2006, Belo Horizonte. Anais do IX Encontro de Modelagem Computacional, 2006.

[96] **W. M. Bessa**; M. S. Dutra. Compensação da Dinâmica dos Propulsores no Controle de Posição de um Veículo Robótico Submarino. In: DINCON'2005 - 4º Congresso Temático de Dinâmica, Controle e Aplicações, 2005, Bauru. Anais do 4º Congresso Temático de Dinâmica, Controle e Aplicações, 2005.

[97] **W. M. Bessa**; M. S. Dutra; L. S. C. Raptopoulos. Controle Robusto Nebuloso de Sistemas Não-lineares com Zona-morta. In: XXVIII CNMAC - Congresso Nacional de Matemática Aplicada e Computacional, 2005, São Paulo. Anais do XXVIII Congresso Nacional de Matemática Aplicada e Computacional, 2005.

[98] **W. M. Bessa**; M. S. Dutra; E. Kreuzer. Thruster Dynamics Compensation for the Positioning of Underwater Robotic Vehicles Through a Fuzzy Sliding Mode Based Approach. In: COBEM 2005 - 18th International Congress of Mechanical Engineering, 2005, Ouro Preto. Proceedings of the 18th International Congress of Mechanical Engineering, 2005.

[99] L. S. C. Raptopoulos; M. S. Dutra; De Lima, A. S. ; **W. M. Bessa**. Comparison Between Male and Female Gait Modes Part I: Kinematics of the Ankle, Knee and Hip Joints. In: COBEM 2005 - 18th International Congress of Mechanical Engineering, 2005, Ouro Preto. Proceedings of the 18th International Congress of Mechanical Engineering, 2005.

[100] **W. M. Bessa**; M. S. Dutra. Controle Adaptativo Nebuloso de Sistemas Não-lineares com Zona-morta. In: V ERMAC R3 - Encontro Regional de Matemática Aplicada e Computacional, 2005, Natal. Anais do V Encontro Regional de Matemática Aplicada e Computacional, 2005.

[101] **W. M. Bessa**; M. S. Dutra; E. Kreuzer; N. R. S. Reis. Projeto e Construção de um Veículo Robótico Submarino Teleoperado via Internet. In: CONEM 2004 - III Congresso Nacional de Engenharia Mecânica, 2004, Belém. Anais do III Congresso Nacional de Engenharia Mecânica, 2004.

[102] **W. M. Bessa**; M. S. Dutra; E. Kreuzer; N. R. S. Reis. Avaliação Experimental da Modelagem Matemática dos Propulsores de um Veículo Robótico Submarino. In: CONEM 2004 - III Congresso Nacional de Engenharia Mecânica, 2004, Belém. Anais do III Congresso Nacional de Engenharia Mecânica, 2004.

[103] **W. M. Bessa**; M. S. Dutra; F. R. da Silva. Comportamento Dinâmico de Estruturas Apoiadas em Fundações Visco-Elásticas e Submetidas a Cargas Móveis. In: COBEM 2001 - XVI Congresso Brasileiro de Engenharia Mecânica, 2001, Uberlândia. Anais do XVI Congresso Brasileiro de Engenharia Mecânica, 2001.

[104] **W. M. Bessa**; F. R. da Silva. Dinâmica de Sistemas Constituídos por Vigas Sujeitas a Cargas Móveis Oriundas de Subsistemas Mecânicos. In: I Congresso Nacional de Engenharia Mecânica, 2000, Natal. Anais do I Congresso Nacional de Engenharia Mecânica, 2000.

[105] **W. M. Bessa**; F. R. da Silva. Modelagem da Interação Dinâmica entre Estruturas de Placa e Subsistemas Mecânicos em Movimento. In: I Congresso Nacional de Engenharia Mecânica, 2000, Natal. Anais do I Congresso Nacional de Engenharia Mecânica, 2000.

[106] **W. M. Bessa**; F. R. da Silva. Cargas Móveis sobre Placas: Uma Formulação através da Análise Modal. In: COBEM 99 - XV Congresso Brasileiro de Engenharia Mecânica, 1999, Águas de Lindóia. Anais do XV Congresso Brasileiro de Engenharia Mecânica, 1999.

[107] M. F. Mendes; M. A. S. França; E. L. Sztajnbok; **W. M. Bessa**. Noise and Vibration - Computational Analysis Applied to Offshore Platforms and FPSO's. In: ISOPE 99 - 9th International Offshore and Polar Engineering Conference, 1999, Brest. Proceedings of the 9th International Offshore and Polar Engineering Conference. Cupertino, California: International Society of Offshore and Polar Engineers, 1999. v. 1. p. 279-284.

Magazine article

[108] M. A. S. França; E. L. Sztajnbok; **W. M. Bessa**. Noise and Vibration - Computational Analysis Applied to Offshore Platforms and FPSO's. T&B Petroleum, , v. 3, p. 47 - 49, 01 dez. 1999.

INVITED TALKS

Keynote presentation

ARTIFICIAL INTELLIGENCE: TRICK OR T(H)REAT? 2019
VI Conference on Psycobiology (Natal, Brazil)

Seminar talks

A FRAMEWORK FOR THE INTELLIGENT CONTROL OF MECHANICAL SYSTEMS 2017
Workshop der AG Dynamische Systeme, University of Hamburg (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Max Planck Institute for Intelligent Systems (Tübingen, Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Multiscale Methods for Interface Coupling, Leibniz University Hannover (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Institute for Technical and Numerical Mechanics, University of Stuttgart (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Institute for Technical Mechanics, Karlsruhe Institute of Technology (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Dynamics and Vibrations Group, Darmstadt University of Technology (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Institute of Applied Mechanics, Munich University of Technology (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2016
Institute of Mechanics, Technische Universität Berlin (Germany)

INTELLIGENT CONTROL OF UNCERTAIN UNDERACTUATED MECHANICAL SYSTEMS 2015
Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (Germany)

INTELLIGENT CONTROL OF NONLINEAR MECHANICAL SYSTEMS 2015
Center for Nonlinear Mechanics, Federal University of Rio de Janeiro (Brazil)

NONLINEAR CONTROL FOR THE DEVELOPMENT OF INTELLIGENT MECHANICAL SYSTEMS 2014
National Laboratory for Scientific Computing (Brazil)

INTELLIGENT CONTROL OF NONLINEAR MECHANICAL SYSTEMS 2013
Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (Germany)

NONLINEAR CONTROL OF MECHANICAL SYSTEMS 2011
Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (Germany)