Miguel P. Xochicale

Curriculum Vitae – March 2017

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Research Interests

I am interested in the fields of Human-Robot Interaction and Human Activity Recognition. As a doctoral researcher I am gaining deeper understanding of the variability of human movements using Non-linear Dynamics and Machine Learning Algorithms in order to create novel analysis and interpretation of signals collected through a network of Inertial Measurement Units.

Education

11/2014 – Present **Ph.D. in Human-Robot Interaction**, *University of Birmingham*, UK.
Thesis: Automatic Classification of Movement Variability in the context of Human-Robot Interaction
Advisors: Professor Chris Baber and Professor Martin Russell

09/2004 – 09/2006 **M.Sc. in Electronics**, *Instituto Nacional de Astrofísica, Óptica y Electrónica*, México.
Thesis: Digital Filter FIR with less multipliers
Advisor: Gordana Jovanovic Dolecek

08/1999 – 09/2004 **B.Eng. in Electronics**, *Instituto Tecnológico de Puebla*, México.
Thesis: Speed control in LabVIEW for a two-degrees-of-freedom Robot.
Advisor: M.Sc. José Esteban Torres León.

Publications

M. P. Xochicale, C. Baber, and M. Oussalah. *Towards the Quantification of Human-Robot Imitation Using Wearable Inertial Sensors*. Vienna, Austria, March 2017. The 12th Annual Conference on Human-Robot Interaction (HRI2017).

M. Xochicale, C. Baber, M. Oussalah, and Smith. *Analysis of the Movement Variability in Dance Activities using Wearable Sensors*. La Granja, Segovia, Spain, October 2016. 2nd International Symposium on Wearable Robotics (WeRob16).

M. Xochicale, C. Baber, and M. Oussalah. *Understanding Movement Variability of Simplistic Gestures Using an Inertial Sensor*. Oulu, Finland, June 2016. The Fifth ACM International Symposium on Pervasive Displays.

Miguel A. Perez-Xochicale and G. Jovanovic-Dolecek. *A New Method for Design Narrow Band Lowpass FIR Filters Using a Scale Function*. Veracruz, Mexico, November 2006. 2nd International Conference on Electronic Design, Proc. edited by Victor Champac at all, ISBN 968-9085-01-8, pp.85-89.

Miguel A. Perez-Xochicale and G. Jovanovic-Dolecek. *A New Method for Design Narrow Band Lowpass FIR Filters Using a Scale Function*. Chihuahua, Mexico, August 2006. 28th International Congress of Electronic Engineering, Proc edited by ITCH Chiuahua, 2006, pp.165-168.

G. Jovanovic-Dolecek and **Miguel A. Perez-Xochicale**. *One Method for Design of Wideband FIR Filters Without Multipliers*. Puebla, Mexico, February 2006. Proc. of the 16th IEEE Conference on Electronics, Communications and Computers, CONIELECOMP 2006, published by IEEE Computer Society, N0. 0-7695-2505-9/06. 2006 IEEE.

Teaching Experience

01/2017– 12/2017 **Teaching Associate**, *University of Birmingham*, UK.
Matlab Laboratories. Lecturer: Dr Edward Tarte

08/2016– 12/2016 **Teaching Associate**, *University of Birmingham*, UK.
Computing for Engineering. Lecturer: Dr Sridhar Pammu

10/2014– 12/2014 **Teaching Associate**, *University of Birmingham*, UK.
Small Embedded Systems. Lecturer: Professor Chris Baber

08/2013– 12/2013 **Teacher**, *Bilingual Hight School at TECMilenio University*, Puebla,México.
Courses: Information Technology, Euclidian Geometry and Microsoft Office Access

Spring 2012 – Autumn 2012 **Invited Lecturer in Mechatronic Engineering**, *Universidad Madero*, Puebla, México.
Courses: Fundamentals of Automation, Industrial Electronics, Research Projects, Metrology, Physics, Computer Integrating Manufacturing, and Power Electronics

Spring 2007 – Spring 2012 **Invited Lecturer in Electronic Engineering**, *Universidad Iberoamericana Puebla*, México.
Courses: Stochastic Processes Course, Digital Signal Processing and Analog Filters.

08/2006 – 06/2007 **Invited Lecturer in Mechatronic and Electric Engineering**, *Instituto Tecnológico Superior de Atlixco*, México.
Courses: Electronics I, Numerical Methods, and Electricity and Magnetism. (January-June 2007.) Electricity and Magnetism, and Electricity and Industrial Electronics (August-December 2006)

Professional Experience

02/2013 – 08/2013 **Research Assistant**, *INAOE's Robotics Laboratory*, México.
Detailed achievements: I develop a Human-Robot Interaction Demo Dance which was based on a ZSTAR3 Radio Frequency single three-axis accelerometer and a Patrolbot mobile robot. For the demo, I explored four gestures wearing the accelerometer in the left wrist in order to create simple dance activities with the Patrolbot mobile robot. For further information go to .

01/2012 – 01/2013 **Invited Lecturer**, *Universidad Madero*, Puebla, México.
Detailed achievements: I proposed and supervised the following students' projects: Haptic Referee Glove, Lightmetre and Pychometre using Arduino, Smart Irrigation, Persistent Of Vision Bicycle Wheel and a Delta Robot Structure. Additionally, I proposed and designed a Mechatronic Laboratory which includes a benchmark for Mechatronic's laboratories in México and Puebla, a 3D layout design and minimal requirements of hardware and software for the laboratory. For further information go to .

09/2003 – 03/2004 **Internship**, *INAOE*, México.
Detailed achievements: I implemented a speed control for a two-degree-of-freedom Robot with Microcontrollers PIC 16F84 and 16F877 that made communication via RS-232 using Virtual Instruments on LabVIEW.

Awards and Honours

11/01/2017 I was selected to present advances of my Ph.D in the second forum of Mexican Talent INNOVATION MATCH MX. The title of my talk is: "Towards the improvement of Healthy Ageing with Humanoid Robos".

16-18/06/2016 I won a shared first prize for presenting one of the two best posters at the XIV Symposium of Mexican Students in the UK at University of Edinburgh.

20-24/07/2015 My project of a low-cost robot was selected amoung 125 applications received from 35 countries and presented at the first international public entrepreneurship program in Mexico (MECATE 2015).

11/2014-11/2017 Full Ph.D. Scholarship in the UK from the Mexican National Council on Science and Technology (CONACyT).

25-27/05/2013 Markovito, a service robot, won the first place at the Mexican Tournament of Robotics 2013 in the cathegory at HOME where I presented a Human-Robot Interation Dance Demo.

09/2004-09/2006 Full M.Sc. Scholarship in México from the CONACyT.

Languages

English IETLS Band Score 6.0: Listening 6.0, Reading 7.0, Writing 6.0, Speaking 5.5. *11/01/14*

Spanish Native tongue

Technical Skills

General Graphic design (Inkscape); Artificial Neural Networks(e.g., TensorFlow); Inertial Measurament Units(data collection and analysis)

Programming R, MATLAB, GNU-Octave, GNU-emacs, C, C++, Kdevelop, LabVIEW, Arduino, Processing, LaTeX, the shell and Robot Operating System (ROS).

Extracurricular Activities

01-06/2016 I am developing a workshop to teach children how to build low cost robots for outreach communities at the University of Birmingham.

11/2013 I like to play around with the Kinect sensor and build low-costs robots.

06/2013 I founded LibrE Robotics, a non-profit organization, to transfer knowledge in Robotics for children to build conditions for a better world.