Miguel Xochicale

Curriculum vitae – June 2016

Research Interests

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

Education

11/2014 – Present **Ph.D. in Electronic and Computer Engineering**, *University of Birmingham*, UK.
Thesis: Automatic Indentification of Movement Variability.
Advisors: Professor Chris Baber and Professor Martin Russell

09/2004 – 09/2006 **M.Sc. in Electronics**, *Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)*, 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 of a Robot of two degrees of freedom.
Advisor: Esteban Torres Leon

Professional Experience

02/2013 – 08/2013 **Research Assistant**, *INAOE's Robotics Laboratory*, México.
Detailed achievements: A Human-Robot Interaction Demo Dance was implemented, it was based on a ZSTAR3 Radio Frequency single three-axis accelerometer and a Patrolbot mobile robot. We explored four gestures wearing the accelerometer in the left writs 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: A design of a Mechatronic Laboratory was proposed, it 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: Implementation of a speed control with both Microcontrollers PIC 16F84 and 16F877 via Serial Communication RS-232 using Virtual Instruments on LabVIEW.

Teaching Experience

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.

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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)

Awards and Honours

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

20-24/07/2015 A low-cost robot prototype was selected amoung 125 applications received from 35 countries and presented at an international public entrepreneurship program in Mexico (MECATE 2015). Video of the prototype interacting with children.

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

25-27/05/2013 First place at the Mexican Tournament of Robotics 2013 in the cathegory at HOME. I presented a Human-Robot Interation (HRI) Dance Demo.

09/2004-09/2006 Full Master Degree 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

Computer skills

Operative Systems Windows(5 years), GNU-Linux Ubuntu and Debian (10 years)

Programing and markup languages R(2 years), GNU-Octave(3 years), GNU-emacs(2 years), MATLAB(2 years), C++(1 year), Kdevelop, LabVIEW(1 year), Arduino(3 years), Processing(1 year), LaTeX(5 years), and Robot Operating System (ROS) (3 months). For further references go to my github account: https://github.com/mxochicale.

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.

11/2012 I adviced different students projects at Madero University on November 2012 : Haptic Referee Glove Lightmetre and Pychometre using Arduino, Smart Irrigation, Persistent Of Vision Bicycle Wheel and a Delta Robot Structure.

Publications

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.

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,.

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

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, .