Miguel P Xochicale

Curriculum Vitae – February 2017

Contact

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Research Interests

I am interested in the fields of Human-Robot Interaction and Human Activity Recognition. Specifically, I am gaining deeper understanding of the variability of human movements and facial expressions using Nonlinear Dynamics and Deep Learning.

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

MP Xochicale and C Baber. *Towards the Analysis of Movement Variability in Human-Humanoid Imitation Activities*. Bielefeld, Germany, October 2017. The 5th International Conference on Human Agent Interaction (HAI2017).

MP 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. The 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 5th 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. The 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. The 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. 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

01/2018–04/2018 **Teaching Associate**, *University of Birmingham*, UK.
Engineering Maths 2. Lecturer: Professor Martin Russell, Dr Carl Anthony

08/2017–12/2017 **Teaching Associate**, *University of Birmingham*, UK.
Engineering Maths 2. Lecturer: Professor Martin Russell

08/2017–12/2017 **Teaching Associate**, *University of Birmingham*, UK.
Computing for Engineering. Lecturer: Dr Sridhar Pammu

01/2017–06/2017 **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 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.
Achievements: I developed a Human-Robot Interaction Demo Dance based on a Patrolbot mobile robot and a ZSTAR3 Radio Frequency single three-axis accelerometer. For the demo, I explored four hand gestures wearing the accelerometer in the left wrist in order to create simple dance activities with the Patrolbot mobile robot.

01/2012 – 01/2013 **Invited Lecturer**, *Universidad Madero*, Puebla, México.
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: (i) a benchmark for laboratories in mechatronics in México and Puebla, (ii) a 3D layout design and (iii) minimal requirements of hardware and software for the laboratory.

09/2003 – 03/2004 **Research Internship**, *INAOE*, México.
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 2017, with my talk "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).

11/2014-11/2018 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. *November 2014*

Spanish Native tongue

Technical Skills

General Deep Learning (e.g., TensorFlow); Inertial Measurament Units(data collection and analysis); Graphic design (Inkscape)

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

Scientific Engagement

2017–2018 **Webmaster and contributor of Machine Learning for Mexico**, GitHub: , Website: .

2017–2018 **Coordinator of the Science Seminars for the Mexican Society at University of Birmingham, UK**, GitHub: , Website: .

2013–2018 **Founder of LibrE Robotics**, *a non-profit organization, to transfer knowledge of Educative Robotics for children to build conditions for a better world*, GitHub: , Website: .