



Miguel Xochicale

Curriculum vitae – April 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 – **Ph.D. in Electronic and Computer Engineering**, *University of Birmingham*, UK.
Present Thesis: Automatic Identification of Movement Variability.
Advisors: Professor Chris Baber and Professor Martin Russell
- 09/2004 – **M.Sc. in Electronics**, *Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)*, México.
09/2006 Thesis: Digital Filter FIR with less multipliers [↗](#)
Advisor: Gordana Jovanovic Dolecek
- 08/1999 – **B.Eng. in Electronics**, *Instituto Tecnológico de Puebla*, México.
09/2004 Thesis: Speed control of a Robot of two degrees of freedom. [↗](#)
Advisor: Esteban Torres Leon

Professional Experience

- 02/2013 – **Research Assistant**, *INAOE's Robotics Laboratory*, México.
08/2013 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 wrists in order to create simple dance activities with the Patrolbot mobile robot. For further information go to [↗](#).
- 01/2012 – **Invited Lecturer**, *Universidad Madero*, Puebla, México.
01/2013 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 – **Internship**, *INAOE*, México.
03/2004 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– **Teacher**, *Bilingual High School at TECMilenio University*, Puebla, México.
12/2013 Courses: Information Technology [↗](#), Euclidian Geometry [↗](#) and Microsoft Office Access [↗](#)
- Spring 2012 – **Invited Lecturer in Mechatronic Engineering**, *Universidad Madero*, Puebla, México.
Autumn 2012 Courses: Fundamentals of Automation [↗](#), Industrial Electronics [↗](#), Research Projects [↗](#), Metrology [↗](#), Physics [↗](#), Computer Integrating Manufacturing, and Power Electronics
- Spring 2007 – **Invited Lecturer in Electronic Engineering**, *Universidad Iberoamericana Puebla*, México.
Spring 2012 Courses: Stochastic Processes Course [↗](#), Digital Signal Processing [↗](#) and Analog Filters.

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08/2006 – **Invited Lecturer in Mechatronic and Electric Engineering**, *Instituto Tecnológico Superior de Atlixco*, México.
06/2007 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

- 20- A prototype of a low-cost robot was selected among 125 applications received from 35 countries
24/07/2015 and presented at an international public entrepreneurship program (MECATE 2015). Video of the prototype interacting with children [▶](#).
- 11/2014- Full PhD Degree Scholarship in the UK from the Mexican National Council on Science and
11/2017 Technology (CONACyT).
- 25- First place at the Mexican Tournament of Robotics 2013 in the category at HOME. I presented
27/05/2013 a Human-Robot Interaction (HRI) Dance Demo [▶](#).
- 09/2004- Full Master Degree Scholarship in México from the CONACyT.
09/2006

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

Programing R(2 years), GNU-Octave(3 years), GNU-emacs(2 years), MATLAB(2 years), C++(1 year), Kde-
and markup velop, LabVIEW(1 year), Arduino(3 years), Processing(1 year), L^AT_EX(5 years), and Robot
languages 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 advised 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 Chihuahua, 2006, pp.165-168, [↗](#).

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