

### Contact

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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 Deep Learning Algorithms in order to create novel analysis and interpretation of signals collected through a network of Inertial Measurement Units.

### Education

- 11/2014 – **Ph.D. in Human-Robot Interaction**, *University of Birmingham*, UK.  
Present Thesis: Automatic Classification of Movement Variability in the context of Human-Robot Interaction 🐱  
Advisors: Professor Chris Baber and Professor Martin Russell
- 09/2004 – **M.Sc. in Electronics**, *Instituto Nacional de Astrofísica, Óptica y Electrónica*, 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 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. 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 Chihuahua, 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, NO. 0-7695-2505-9/06. 2006 IEEE 📄 🐱.

### Teaching Experience

- 01/2017– **Teaching Associate**, *University of Birmingham*, UK.  
12/2017 Matlab Laboratories. Lecturer: Dr Edward Tarte
- 08/2016– **Teaching Associate**, *University of Birmingham*, UK.  
12/2016 Computing for Engineering. Lecturer: Dr Sridhar Pammur
- 10/2014– **Teaching Associate**, *University of Birmingham*, UK.  
12/2014 Small Embedded Systems. Lecturer: Professor Chris Baber

- 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.
- 08/2006 – **Invited Lecturer in Mechatronic 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)

## Professional Experience

- 02/2013 – **Research Assistant**, *INAOE's Robotics Laboratory*, México.  
 08/2013 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 – **Invited Lecturer**, *Universidad Madero*, Puebla, México.  
 01/2013 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 – **Internship**, *INAOE*, México.  
 03/2004 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" with my talk "Towards the improvement of Healthy Ageing with Humanoid Robos". [↗](#). [📺](#)
- 16- I won a shared first prize for presenting one of the two best posters at the XIV Symposium of Mexican Students  
 18/06/2016 in the UK at University of Edinburgh. [↗](#).
- 20- My project of a low-cost robot was selected among 125 applications received from 35 countries and presented at  
 24/07/2015 the first international public entrepreneurship program in Mexico (MECATE 2015) [↗](#) [YouTube](#).
- 11/2014- Full Ph.D. Scholarship in the UK from the Mexican National Council on Science and Technology (CONACyT).  
 11/2018
- 25- Markovito, a service robot, won the first place at the Mexican Tournament of Robotics 2013 in the category at  
 27/05/2013 HOME where I presented a Human-Robot Interaction Dance Demo [YouTube](#).
- 09/2004- Full M.Sc. Scholarship in México from the CONACyT.  
 09/2006

## Languages

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|---------|--|----------|
| 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

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|-------------|---|
| General     | Artificial Neural Networks(e.g., TensorFlow); Inertial Measurement Units(data collection and analysis); Graphic design (Inkscape)                               |
| Programming | R, python, GNU-Octave, GNU-emacs, C, C++, Arduino, Processing, L <sup>A</sup> T <sub>E</sub> X, the shell and Robot Operating System (ROS), MATLAB and LabVIEW. |

## 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 made an Interactive Solar System with the Kinect sensor V1 [↗](#).
- 06/2013 I founded LibrE Robotics, a non-profit organization, to transfer knowledge in Robotics for children to build conditions for a better world [↗](#).