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Research Interests

I am interested in the fields of Human-Robot Interaction and Human Activity Recognition for which I am intuitively understanding and applying tools from chaos, nonlinear dynamics and deep learning to automatically quantify movement variability.

Education

- 11/2014 – 11/2018 **Ph.D. in Human-Robot Interaction**, *University of Birmingham*, UK.
Thesis: Automatic Classification of Movement Variability in the context of Human-Robot Interaction 🐱
Supervisors: 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 📄 🐱
Supervisor: 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. 📄 🐱
Supervisor: José Esteban Torres León.

Publications

MP Xochicale and C Baber. *Quantifying the Inherent Chaos of Human Movement Variability*. Madrid, Spain, June 2018. The 15th Experimental Chaos and Complexity Conference (ECCC15) 📄 📄 🐱.

MP Xochicale and C Baber. *Towards the Analysis of Movement Variability for Facial Expressions with Nonlinear Dynamics*. Glasgow, Scotland, UK, April 2018. The 7th Consortium of European Research on Emotion Conference (CERE2018) 📄 📄 🐱.

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 📄 🐱.

Teaching Experience







- 08/2014–04/2018 **Teaching Associate**, *University of Birmingham*, UK.
(01/2018–04/2018) Engineering Maths 2. Lecturers: Professor Martin Russell, Dr Carl Anthony
(08/2017–12/2017) Engineering Maths 2. Lecturer: Professor Martin Russell
(08/2017–12/2017) Computing for Engineering. Lecturer: Dr Sridhar Pammu
(01/2017–04/2017) Matlab Laboratories. Lecturer: Dr Edward Tarte
(08/2016–12/2016) Computing for Engineering. Lecturer: Dr Sridhar Pammu
(08/2014–12/2014) Small Embedded Systems. Lecturer: Professor Chris Baber
- 08/2013–12/2013 **Invited Lecturer**, *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 , <i>Universidad Madero</i> , 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 , <i>Universidad Iberoamericana Puebla</i> , México. Courses: Stochastic Processes Course  , Digital Signal Processing  and Analog Filters.
08/2006 – 06/2007	Invited Lecturer in Mechatronic Engineering , <i>Instituto Tecnológico Superior de Atlixco</i> , 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 , <i>INAOE's Robotics Laboratory</i> , México. Achievements: I developed a Human-Robot Interaction Demo for dancing activities based on a Patrolbot mobile robot and a ZSTAR3 Radio Frequency single three-axial accelerometer. For the demo, I explored four hand gestures where user's worn the accelerometer at his/her left wrist in order to create simple dance activities with the mobile robot  .
01/2012 – 01/2013	Invited Lecturer , <i>Universidad Madero</i> , 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 , <i>INAOE</i> , 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	My work "Towards Healthy Ageing with Humanoid Robots" was selected for a talk at the second forum of Mexican Talent, Innovation Match MX 2017,  
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 among 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's team won the first place at the Mexican Tournament of Robotics 2013 in the category at HOME where I presented a Human-Robot Interaction Dance Demo. 
09/2004-09/2006	Full M.Sc. Scholarship in México from the CONACyT.

Languages












Spanish	Native
English	Fluent

IETLS Band Score 6.0, January 2014

Technical Skills

General	Inertial Measurement Units (calibration, collection and data analysis), Graphic design (Inkscape, GIMP), Single-board computers and microcontrollers (RaspberryPi, BeagleBone, Arduino and PIC), and Artificial Neural Networks (e.g., TensorFlow).
Programming	R, python, Robot Operating System, C, C++, Processing, L ^A T _E X, the shell, vim, GNU-emacs, GNU-Octave (or MatLab), and open-source enthusiast GitHub user @mxochicale.

Scientific Engagement

2017–2018	Contributor and webmaster of Machine Learning for Mexico , GitHub:  , Website:  .
08/2014–06/2018	At University of Birmingham, UK. (05-2018) Finalist at the Three Minute Thesis Competition 2018. Video:  and GitHub:  . (2015–2018) Research Poster Conference for (2015)  , (2016)  , and (2018)  . GitHub:  . (2014–2018) Presenting Demos of Human-Robot Interaction at the Undergraduate Open Days. GitHub:  . (2017–2018) Coordinator of the Science Seminars for the Mexican Society. GitHub:  , Website:  .