# Daniel Olguín Olguín

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## EDUCATION

**2007 – Pesent** **Massachusetts Institute of Technology (Cambridge, MA, USA)**
***PhD in Media, Arts, and Sciences*** **(MIT Media Laboratory)** GPA: 4.9/5.0
Expected graduation date: June, 2011
Advisor: Alex (Sandy) Pentland

**2005 – 2007** **Massachusetts Institute of Technology (Cambridge, MA, USA)**
***Master in Media, Arts, and Sciences*** **(MIT Media Laboratory)** GPA: 4.9/5.0
Advisor: Alex (Sandy) Pentland

**2004 – 2005** **Tecnológico de Monterrey (Monterrey, N.L., Mexico)**
***Master of Science in Electronic Systems Engineering*** GPA: 97/100
Advisors: Sergio Martínez-Chapa and Frantz Bouchereau-Lara

**1999 – 2003** **Tecnológico de Monterrey (Monterrey, N.L., Mexico)**
***Bachelor of Science in Electronics and Communications Engineering*** GPA: 97/100
Graduated with Excellence Honors
Member of the Supplementary Educational Program for Outstanding Students
Obtained a Literature Diploma, History Diploma, and Scientific Research Diploma

**2003** **Université de Poitiers (Poitiers, France)**
***Electrical Engineering and Automation Diploma*** **(École Supérieure d'Ingénieurs de Poitiers)**

**2001 – 2002** **Institut National de Télécommunications (Paris, France)**
***Diplôme d'ingénieurs***
Completed the 1st and 2nd years of the program as an exchange student from Tecnológico de Monterrey

## EXPERIENCE

**2005 – Pesent** **Massachusetts Institute of Technology, Media Laboratory** (Cambridge, MA, USA)
***Research Assistant*** (Human Dynamics Group)

**Sensible Organizations** Created a wearable computing research platform for measuring and analyzing individual and collective patterns of human behavior using *sociometric badges* to understand how patterns of behavior shape individuals and organizations, identify, measure, and quantify social interaction, information flow, and organizational behavior.

**Reality Mining in Organizations** Collected and analysed large amounts of data from social interactions using *sociometric badges* in several organizations (i.e. a bank in Germany, a bank in the Czech Republic, a call center in the US, a hospital in the US, programming teams in Finland, leadership workshops in the US and Japan).

**Sociometric Badges** Designed the *sociometric badge,* a wearable electronic sensor that measures social signals from speech features, body motion, relative location, proximity, and face-to-face intraction. 600 prototypes have been manufactured and used in real organizations.

**Human Activity Recognition** Collected data from human daily activities (i.e. walking, running, sitting, etc.) using wireless motion sensors and implemented a pattern recognition algorithm to automatically classify them.

**iPhone Application for EMA** Designed and implemented an iphone application for ecologic momentary assessment (EMA) of participants in a weight loss study in collaboration with the University of Pittsburgh School of Nursing.

**01-02/2008** **Hitachi Central Research Laboratory.** (Tokyo, Japan)
***Research Intern*** (Sensor Net Strategic Project)
Applied machine learning algorithms to data collected using wearable electronic sensor badges in order to infer a person's state of *flow* and measure social influence among individuals.

**06-08/2007** **Motorola Labs.** (Tempe, AZ, USA)

***Research Intern*** (Embedded Systems Research, Wearables and Haptics Group)

Designed a gesture recognition algorithm for a Bluetooth watch with a 3-axis accelerometer. Performed several user studies to determine the most natural set of hand gestures, validate the reconition accuracy of the algorithm, and evaluate its performance in real-time.

**07-08/2005** **Qualcomm, Inc.** (San Diego, CA USA)

***Interim Engineering Intern*** (QCT Mixed-Signal Test Engineering Group)

Developed a test method to perform automatic phase noise measurements in PLL synthesizers using a spectrum analyzer and Agilent 93000 System on a Chip ATE Series. Implemented the test method using C and GPIB, and used it on Qualcomm's MBD1000 Multicast Companion Chipset phase noise characterization. Developed a test method to measure PLL lock time using GuideTech Femto 2000 Time Interval Analyzer.

**09-12/2003** **Schweitzer Engineering Laboratories** (Monterrey, N.L., Mexico)

***Integration and Automation Intern***

Designed and developed a simulation system to perform functional tests on protection, control and measurement systems for the electrical industry in a more efficient way. Created the system's user interface using Excel and Visual Basic for Applications.

## SKILLS

**Coursework** ■ Machine Learning ■ Wireless Sensor Networks ■ Sensor Technologies for Interactive Environments ■ Digital Innovations ■ Foundations of Software Engineering ■ Signals and Systems Analysis ■ Digital Signal Processing ■ Adaptive Digital Filters Design ■ Digital Image Processing ■ Computer Simulations ■ Electronic Circuits Design ■ Electronic Instrumentation ■ Digital Systems Design ■ Electrical Circuits Analysis ■ Circuits and Measurements ■ Microprocessors and Peripherals ■ Communications Systems ■ Electromagnetic Theory ■ Transmission Media ■ Control Engineering ■ Numerical Analysis ■ Telecommunications Networks ■ Fundamentals of Biomedical Engineering ■ Mixed-Signal IC Test and Measurement ■ Strategic Organizational Design ■ IT for the Health Care System of the Future

**Software** Altium Designer ■ PSpice ■ Mentor Graphics ■ Electronics Workbench ■ Matlab ■ Maple ■ LabView ■ ModelSim Objective C ■ C# ■ C++ ■ C ■ Visual Basic ■ Assembly Language ■ Ladder Programming (PLC's) ■ VHDL

**Languages** **Spanish** (Native Speaker) ■ **English** (Fluent, TOEFL score: 273/280) ■ **French** (Fluent, DELF 2ème degré) **Japanese** (Intermediate, Japanese Language Proficiency Test Level 3, 5 years of coursework).

## HONORS AND AWARDS

■ **TELMEX Fellowship** (MIT, Media Laboratory, 2005-2006)
■ **Excellence Scholarship** for a Master of Science Degree (Tecnológico de Monterrey and CONACyT, 2004-2005)
■ **Excellence Scholarship** for a Bachelor of Science Degree (Tecnológico de Monterrey, 1999-2003)
■ **Excellence Scholarship** for High School (Tecnológico de Monterrey, 1996-1999)
■ **TELMEX Foundation Scholarship** for Academic Excellence (1999-2005)
■ **Electronics Engineering Certification**. Granted by CENEVAL (National Evaluation Center for Higher Education. Mexico, 2003) Global Score: 1163
■ **Excellence Honors** for BS in Electronics and Communications (Tecnológico de Monterrey, 2003)

## PUBLICATIONS

### Thesis

(1) Daniel Olguín Olguín, ***Adaptive digital filtering algorithms for the elimination of power line interference in EEG signals***. MS Thesis. Tecnológico de Monterrey, Campus Monterrey. Mexico . May, 2005.
(2) Daniel Olguín Olguín, ***Sociometric Badges: Wearable Technology for Measuring Human Behavior***. MAS Thesis. Massachusetts Institute of Technology, Media Laboratory. Cambridge, MA. May, 2007.

### Journal Papers

(1) Koji Ara, Naoto Kanehira, Daniel Olguín Olguín, Benjamin Waber, Taemie Kim, Akshay Mohan, Peter Gloor, Robert Laubacher, Daniel Oster, Alex (Sandy) Pentland, and Kazuo Yano. ***Sensible Organizations: Changing our Business and Work Styles through Sensor Data***. Journal of Information Processing. The Information Processing Society of Japan. Vol. 16. April, 2008.
(2) Daniel Olguín Olguín, Benjamin Waber, Taemie Kim, Akshay Mohan, Koji Ara, and Alex (Sandy) Pentland. ***Sensible Organizations: Technology and Methodology for Automatically Measuring Organizational Behavior***. IEEE Transactions on Systems, Man, and Cybernetics-Part B: Cybernetics. Vol. 39, No. 1. February, 2009.

### Conference Papers

(1) Daniel Olguín Olguín, Frantz Bouchereau Lara, and Sergio Omar Martínez Chapa. ***Adaptive Notch Filter for EEG Signals Based on the LMS Algorithm with Variable Step-Size Parameter***. Proceedings of the 39 th International Conference on Information Sciences and Systems. The Johns Hopkins University . Baltimore , USA . March, 2005.

(2) Salvador Acha Izquierdo, Daniel Olguín Olguín, and Sergio Omar Martínez Chapa. ***Transmisión Inalámbrica de Señales Electroencefalográficas***. IEEE ROC&C'2005 Decimosexta Reunión de Otoño de Comunicaciones, Computación, Electrónica, y Exposición Industrial. Acapulco , Mexico. November, 2005.
(3) Daniel Olguín Olguín, and Alex (Sandy) Pentland. ***Human Activity Recognition: Accuracy across Common Locations for Wearable Sensors***. IEEE 10th International Symposium on Wearable Computing (Student Colloquium Proceedings). Montreaux, Switzerland. October 11-14, 2006.
(4) Daniel Olguín Olguín, Joseph A. Paradiso, and Alex (Sandy) Pentland. ***Wearable Communicator Badge: Designing a New Platform for Revealing Organizational Dynamics***. IEEE 10th International Symposium on Wearable Computing (Student Colloquium Proceedings). Montreaux, Switzerland. October 11-14, 2006.
(5) Benjamin N. Waber, Daniel Olguín Olguín, Taemie Kim, Akshay Mohan, Koji Ara, and Alex (Sandy) Pentland. ***Organizational Engineering using Sociometric Badges***. NetSci 2007: International Workshop and Conference on Network Science (Contributed Talk). Queens, NYC. May 20-25, 2007.
(6) Peter A. Gloor, Daniel Oster, Johannes Putzke, Kai Fischback, Detlef Schoder, Koji Ara, Taemie J. Kim, Robert Laubacher, Akshay Mohan, Daniel Olguin Olguin, Alex (Sandy) Pentland, and Bejamin N. Waber. ***Studying Microscopic Peer-to-Peer Communication Patterns***. AMCIS 2007: Americas Conference on Information Systems. Keystone, Colorado. August 9-12, 2007.
(7) Daniel Olguín Olguín, and Alex (Sandy) Pentland. ***Sociometric Badges: State of the Art and Future Applications***. IEEE 11th International Symposium on Wearable Computing (Doctoral Colloquium Proceedings). Boston, MA. Octorber, 2007.
(8) Johannes Putzke, Kai Fischbach, Detlef Schoder, Daniel Oster, Peter A. Gloor, Daniel Olguin Olguin, and Alex (Sandy) Pentland. ***Business Intelligence und die Analys unternehmensinterner Kommunikationsprozesse***. Multikonferenz Wirtschaftsinformatik (MKWI). Munich, Germany. February, 2008.
(9) Daniel Olguín Olguín, and Alex (Sandy) Pentland. ***Social Sensors for Automatic Data Collection***. 14th Americas Conference on Information Systems. Toronto, Ontario. August 14-17, 2008.
(10) Daniel Olguín Olguín, Peter A. Gloor and Alex (Sandy) Pentland. ***Capturing Individual and Collective Patterns of Human Behavior with Wearable Sensors***. AAAI Symposium on Human Behavior Modeling. Stanford, CA. March 22-15, 2009.
(11) Daniel Olguín Olguín, Peter A. Gloor and Alex (Sandy) Pentland. ***Wearable Sensors for Pervasive Healthcare Management***. IEEE Conference on Pervasive Health. London, UK. April 1-4, 2009.
(12) Taemie Kim, Daniel Olguín Olguín, Benjamin N. Waber, and Alex (Sandy) Pentland. ***Sensor-Based Feedback Systems in Organizational Computing***. Workshop on Social Computing with Mobile Phones & Sensors. In conjunction with the 2009 IEEE International Conference on Social Computing. Vancouver, BC. August, 2009.

### Invited Talks

(1) ***Sensible Organizations***. ESA Social Networking Summit at Motorola. Schaumburg, IL USA. July 18, 2006.
(2) ***Social Network Technology to Evaluate and Facilitate Collaboration***. NIH Roadmap Interdisciplinary Methodology and Technology Summit. North Bethesda, MD USA. August 21-22, 2006.
(3) ***Social Network Technology to Evaluate and Facilitate Collaboration***. NIDA International Forum. Technological Innovations to Build International Research Capacity. Quebec City, Canada. June 15-18, 2007.
(4) ***Sensible Organizations: Scientific Management through Sensor Networks***. SciFoo. Sunnyvale, CA. August 3-5, 2007.
(5) ***Sensible Organizations: Scientific Management through Sensor Networks***. O'Reilly Ignite. Boston, MA. September 6, 2007.
(6) ***Predicting Flow State and Social Influence From Sensor Data***. Hitachi Central Research Laboratory. Tokyo, JAPAN. January 30, 2008.
(7) ***Tecnologías de la Información para el Análisis de Interacciones Sociales y el Mejoramiento de la Productividad en las Organizaciones***. XXXIII Reunion Nacional CIAPEM. Pachuca, Hgo. MEXICO. September 24, 2009

## INTELLECTUAL PROPERTY

(1) Daniel Olguín Olguín and Daniel Sadler. ***Power saving method for mobile devices***. TRADE SECRET. Motorola, Inc. Disclosure ID # 51307. Year: 2008
(2) Daniel Olguín Olguín, Benjamin Waber, Taemie Kim, Koji Ara, and Alex Pentland. ***Method and apparatus for automatic measurement of organizational behavior***. PROVISIONAL PATENT APPLICATION (056754/0470PROV). MIT Reference # 13025T. Year: 2008

## LEADERSHIP/EXTRACURRICULAR

- UROP (Undergraduate Research Opportunities Program) supervisor of undergraduate students at MIT
- Sociometric badge project leader at the MIT Media Lab (Managed 125K budget)
- IEEE Student Member (2000-2009)
- Publications in which I have acted as a reviewer:
    - IEEE International Workshop on Wearable and Implantable Body Sensor Networks (2006)
    - IEEE Transactions in Systems, Man, and Cybernetics Part B: Cybernetics (2007)
    - IEEE Transactions on Neural Systems and Rehabilitation Engineering (2008)
    - 14th Americas Conference on Information Systems (2008)
    - IEEE International Symposium on Wearable Computers (2007, 2008)
    - IEEE International Conference on Development and Learning (2008)
    - Journal on Control Engineering Practice (2008)
- Workshop organizer:
    - Workshop on Social Computing with Mobile Phones & Sensors. At the 2009 IEEE International Conference on Social Computing. Vancouver, BC. August, 2009.
    - Workshop on Multimodal Sensor-Based Systems and Mobile Phones for Social Computing. At the 2009 ICMI-MLMI International Conference on Multimodal Interfaces. Cambridge, MA. November, 2009.