

Daniel Olguín Olguín

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INTERESTS

To lead a research team developing mobile technologies to improve the way people work and live. I am inspired by technology that makes our lives easier and more productive. My research areas include: ubiquitous computing, human behavior sensing, data mining, social network analysis, and organizational engineering.

EDUCATION

- 2007 – 2011** **Massachusetts Institute of Technology (Cambridge, MA, USA)**
PhD in Media Arts and Sciences (MIT Media Laboratory) GPA: 5.0/5.0
Dissertation: Sensor-Based Organizational Design and Engineering
Advisor: Alex (Sandy) Pentland
Areas: *Social computing; human behavior sensing, modeling and simulation; reality mining; social network analysis.*
- 2005 – 2007** **Massachusetts Institute of Technology (Cambridge, MA, USA)**
Master in Media Arts and Sciences (MIT Media Laboratory) GPA: 4.9/5.0
Dissertation: Sociometric Badges: Wearable Technology for Measuring Human Behavior
Advisor: Alex (Sandy) Pentland
Areas: *Wearable computing, human behavior sensing.*
- 2004 – 2005** **Tecnológico de Monterrey (Monterrey, NL, Mexico)**
Master of Science in Electronic Systems Engineering GPA: 97/100
Dissertation: Adaptive digital filtering algorithms for the elimination of power line interference in EEG signals
Advisors: Sergio Martínez-Chapa and Frantz Bouchereau-Lara
Areas: *Digital signal processing, biomedical engineering.*
- 1999 – 2003** **Tecnológico de Monterrey (Monterrey, NL, Mexico)**
Bachelor of Science in Electronics and Communications Engineering GPA: 97/100
Member of the Supplementary Education Program for Outstanding Students, obtaining: Literature, History, and Scientific Research Diplomas
- 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

WORK EXPERIENCE

- 2011 – Present** **Sociometric Solutions, Inc.**
Co-Founder, Director & Chief Technology Officer
Partner, Sociometric Consulting
- Sociometric Solutions, Inc. is a management consulting firm that uses social sensing technology that I developed during my graduate research at MIT, to understand companies' internal communication patterns and design innovative organizational transformation strategies.
- 2005 – 2011** **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. Deployed this sensing platform in more than 10 companies in Germany, Japan, Finland,
- Last updated: June, 2011

the Czech Republic and the USA. Performed statistical analysis and data mining on sociometric data, and provided organizational design consulting services to sponsor companies.

- Sociometric Badges** Designed and built the *sociometric badge*, a wearable electronic embedded system that measures social signals from speech features, body motion, relative location, proximity, and face-to-face interaction. 600 prototypes have been manufactured and used in real organizations. Currently designing version 3.0 for manufacturability.
- 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.
- Mobile Phone Reality Mining** 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. Designed and implemented an EMA survey for Windows Mobile phones to collect data about users' health patterns and wellness behaviors in a longitudinal study carried out in one of MIT's undergraduate dorms.

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 recognition accuracy of the algorithm, and evaluate its performance in real-time.

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

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

- Relevant 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
- Design Software** Altium Designer ■ PSpice ■ Mentor Graphics ■ Electronics Workbench ■ Matlab ■ Maple ■ LabView ■ ModelSim ■ Objective C ■ C++ ■ C# ■ Objective C ■ iPhone SDK ■ Windows Mobile SDK
- Languages** **Spanish** (Native Speaker) ■ **English** (Fluent, TOEFL score: 273/280) ■ **French** (Fluent, DELF 2^{ème} degré) ■ **Japanese** (Intermediate, Japanese Language Proficiency Test Level 3, 5 years of coursework).

HONORS AND AWARDS

- **Outstanding Leadership Award** (IEEE Conference on Social Computing, 2009)
- **Research Assistantship** covering 100% of Master's and PhD tuition and monthly stipend (MIT Media Laboratory, 2005-2011)
- **TELMEX Fellowship** (MIT Media Laboratory, 2005-2006)
- **Excellence Scholarship** covering 100% of Master's tuition (Tecnológico de Monterrey and CONACyT, 2004-2005)
- **Excellence Scholarship** covering 90% of Bachelor's tuition (Tecnológico de Monterrey, 1999-2003)
- **Excellence Scholarship** covering 90% of High School tuition (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

Theses

- (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. [Cited by 3]
- (2) Daniel Olguín Olguín, **Sociometric Badges: Wearable Technology for Measuring Human Behavior**. MAS Thesis. Massachusetts Institute of Technology, Media Laboratory. Cambridge, MA. May, 2007. [Cited by 22]

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. [Cited by 7]
- (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. [Cited by 49]
- (3) Daniel Olguín Olguín and Alex (Sandy) Pentland. **Sensor-based organisational design and engineering**. International Journal of Organisational Design and Engineering. Vol. 1, Nos. 1/2, pp. 69-97, 2010.

Book Chapters

- (1) Daniel Olguín Olguín, Anmol Madan, Manuel Cebrian, and Alex (Sandy) Pentland. **Mobile Sensing Technologies and Computational Methods for Collective Intelligence**. To appear in: Nik Bessis, and Fatos Xhafa (Eds.) Next Generation Data Technologies for Collective Computational Intelligence. Springer, 2011.

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. [Cited by 4]
- (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. [Cited by 13]
- (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. [Cited by 15]
- (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. [Cited by 19]
- (6) Peter A. Gloor, Daniel Oster, Johannes Putzke, Kai Fischbach, Detlef Schoder, Koji Ara, Taemie J. Kim, Robert Laubacher, Akshay Mohan, Daniel Olguin Olguin, Alex (Sandy) Pentland, and Benjamin N. Waber. **Studying Microscopic Peer-to-Peer Communication Patterns**. AMCIS 2007: Americas Conference on Information Systems. Keystone, Colorado. August 9-12, 2007. [Cited by 15]
- (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. October, 2007. [Cited by 2]
- (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. [Cited by 3]
- (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. [Cited by 11]
- (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. [Cited by 10]
- (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. [Cited by 16]
- (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. [Cited by 6]
- (13) Fischbach, K. Gloor, P. Lassenius, C. Olguín Olguín, D. Putzke, J. Schoder, D. **Analyzing the Flow of Knowledge with Social Badges**. Proceedings of COINs 2009, Collaborative Innovations Networks Conference. Savannah GA, October, 2009.
- (14) Daniel Olguín Olguín, and Alex (Sandy) Pentland. **Sensor-Based Organizational Engineering**. ICMI-MLMI'09 Workshop on Multimodal Sensor-Based Systems and Mobile Phones for Social Computing. Cambridge MA, USA. November 6, 2009.
- (15) Daniel Olguín Olguín, and Alex (Sandy) Pentland. **Sensible Organizations: A Sensor-Based System for Organizational Design and Engineering**. International Workshop on Organizational Design and Engineering. Lisbon, Portugal. December 11-12, 2009.
- (16) Daniel Olguín Olguín, and Alex (Sandy) Pentland. **Assessing Group Performance from Collective Behavior**. CSCW 2010 Workshop on Collective Intelligence in Organizations. Savannah, GA. February 6, 2010.
- (17) Casper Lassenius, Tuomas Niinimäki, Arttu Piri, Daniel Olguín Olguín, and Peter Gloor. **Measuring Programmer Creativity Through Sociometric Badges**. Proceedings of the 30th International Sunbelt Social Network Conference. Trento, Italy. June-July, 2010.

- (18) Benjamin N. Waber, Daniel Olguín Olguín, Taemie Kim, and Alex (Sandy) Pentland. **Productivity Through Coffee Breaks: Changing Social Networks by Changing Break Structure**. Proceedings of the 30th International Sunbelt Social Network Conference. Trento, Italy. June-July, 2010.
- (19) Lora E. Burke, Edwin Music, Stephen Rathbun, Daniel Olguín Olguín, Brian French, Mindi A. Styn, and Saul Shiffman. **Feasibility of Using Smart Phones for EMA Data Collection in a Study of Weight Loss Maintenance**. Obesity 2010. 28th Annual Scientific Meeting. San Diego, CA. October, 2010.
- (20) Daniel Olguín Olguín, Michelle Kam, and Alex (Sandy) Pentland. **Quantifying the Effects of Centrality and Tie Strength on Performance in Face-to-Face Networks**. Workshop on Information Networks. New York, NY. September, 2010.
- (21) Bruce Skarin, Shawn Weil, Andrew Duchon, Courtney Dean, Daniel Olguín Olguín, Taemie Kim, Alan Jaeger. **Teams-of-Teams Performance Assessment through Multi-Channel Interaction Monitoring**. The Interservice/Industry Training, Simulation & Education Conference. Orlando, FL. December, 2010.

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) **Coolhunting and Coolfarming through Swarm Creativity**. MIT IAP Course. Instructor: Peter A. Gloor. January 13 – 15, 2009.
- (8) **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.
- (9) **The Social Data Revolution and the Future of Relationships**. Workshop at the Gottlieb Duttweiler Institute for Economic and Social Studies. Zurich, Switzerland, February 1-3, 2010.

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**. PATENT APPLICATION. MIT Reference # 13025T. Year filed: 2008

LEADERSHIP/EXTRACURRICULAR

- UROP (Undergraduate Research Opportunities Program) supervisor of more than 10 undergraduate students at MIT
- Sociometric badge project leader at the MIT Media Laboratory (Managed \$125K budget)
- IEEE Member (2000-present)
- 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)
 - Studies in Computational Intelligence Book Series, Springer (2010)
 - International Journal of Intelligent Control and Systems (2011)
- Publications in which I am an editorial board member:
 - International Journal of Organisational Design and Engineering (2009-2010)
- 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.