

## Fernando Flores-Mangas, Ph.D.

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CONTACT INFORMATION	iVirtual 509 - 172 Spadina Ave. Toronto, ON, M5T 2C2 Canada	LinkedIn: <a href="http://www.linkedin.com/in/fermangas">www.linkedin.com/in/fermangas</a> Mobile: (416) 827-two-nine-seven-two E-mail: <a href="mailto:fermangas@gmail.com">fermangas@gmail.com</a> www: <a href="http://www.cs.toronto.edu/~mangas">www.cs.toronto.edu/~mangas</a>
CITIZENSHIP	Canada, Mexico, Spain	
INTERESTS	Strategic Planning, Fundraising, Management, Coordination, Leadership, Communication, Research and Engineering in the areas of Artificial Intelligence (AI), Computer Vision (CV), Machine Learning (ML), Computer Graphics, Medical Imaging, Wearables, Robotics.	
CURRENT POSITION	<p><b>iVirtual</b>, Co-founder, CTO and Chief Scientist, March 2014 - present</p> <p>Senior researcher with over 15 years of experience in Computer Vision, Machine Learning and Computer Engineering on both the academic and industrial sides. Over 5 years of experience in leadership, fundraising and strategic planning. Our company has delivered flawless marketing activations with state of the art technology to clients like Samsung, Chevrolet, Telus and Cadillac Fairview.</p> <p>I am the author of the majority of the algorithms that power iVirtual's 3D reconstruction pipeline, where two cellphone pictures of a person are enough to produce a highly realistic, fully animated 3D model. This technology includes R&amp;D work on several CV and ML problems, such as camera calibration, colour calibration, landmark detection, image segmentation, face reconstruction, automatic humanoid rigging, automatic body modelling, hair modelling, etc.</p> <p>I engage in most leadership roles within the company including investor fundraising and follow-up presentations, strategic planning, product development and execution.</p>	
EDUCATION	<p><b>University of Toronto</b>, Toronto, ON, Canada</p> <p>Ph.D, Computer Science, Computer Vision, October 2014</p> <ul style="list-style-type: none"><li>• Thesis title: Model Fitting for Motion Segmentation.</li><li>• Advisor: Allan Jepson, Ph.D</li></ul> <p><b>Universidad Nacional Autonoma de Mexico, (UNAM)</b> <b>National Autonomous University of Mexico</b>, Mexico City, Mexico</p> <p>M.Sc., Computer Science, Machine Learning, Computer Vision, Aug 2005 (with honors)</p> <ul style="list-style-type: none"><li>• Thesis: Analysis of Ultrasound Images Using Neural Networks</li><li>• Advisor: Lucia Medina, Ph.D</li></ul> <p><b>Instituto Tecnologico Autonomo de Mexico, (ITAM)</b> <b>Mexico Autonomous Institute of Technology</b>, Mexico City, Mexico</p> <p>Double B.Eng., Computer Engineering, and Telematics Engineering, Dec 2001 (with honors in both degrees)</p> <ul style="list-style-type: none"><li>• Thesis: Automatic Segmentation of Magnetic Resonance Images of the Brain</li><li>• Advisor: Ma. Elena Algorri-Guzman, Ph.D</li></ul>	

AWARDS,  
SCHOLARSHIPS  
AND GRANTS

University of Toronto

- Ph.D student financial support, 2006 - 2013

National Autonomous University of Mexico

- M.Sc. Scholarship, 2004 - 2005

National Council for Science and Technology (Mexico)

- M.Sc. Scholarship, 2004 - 2005

Robocup American Open American Open

- Small-Size Robot Soccer, 3rd Place, 2003
- Small-Size Robot Soccer, 2nd Place, 2004

National Association for Engineering Schools and Faculties (Mexico)

- Best Student Award, 2003

Mexico Autonomous Institute of Technology

- Undergraduate scholarship, 1996
- Best Thesis Award, 2003 (Honorable mention)

RESEARCH AND  
TEACHING  
EXPERIENCE

**University of Toronto**, Toronto, ON, Canada

*Instructor*

**Spring 2014**

- Course title: CSC320 - Introduction to Visual Computation
- Enrollment: 100+ students
- Course website: <http://www.cs.toronto.edu/~mangas/teaching/320/>.

*Teaching Assistant*

**September 2006 to 2013**

- Lectured on CSC258 - Computer Organization's lab.
- Provided assistance to second-year engineering students.
- Graded lab assignments.

**Microsoft Research (MSR)**, Redmond, WA, USA

*Research Internship*

**January to April 2005**

- First cohort (of four) Latin American graduate students to work at MSR, first from Mexico.
- Project on physiological signal monitoring using wearables.
- Research involved hardware, software and signal processing. Framework was granted a patent. *Refer to Publications and Patents sections.*
- Mentor: Nuria Oliver
- Manager: Mary Czerwinski.

*Research Internship*

**September to December 2005**

- Worked on real time workout feedback from heart rate data using a mobile phone.
- Research involved signal processing and technology integration.
- Paper nominated to "Best paper" award at MobileHCI.
- Patents were granted for developed data-processing techniques, algorithms and the whole framework. *Please, refer to Publications and Patents sections.*
- Mentor: Nuria Oliver
- Manager: Mary Czerwinski.

UNAM, Mexico City, Mexico

*Research Assistant*

**August 2003 to September 2005**

- Worked on ultrasonic signal analysis using neural networks.

ITAM, Mexico City, Mexico.

*Research Assistant, CANNES Laboratory*

**August 2001 to July 2003**

- Research on mobile robotics including topics such as real time computer vision, artificial intelligence, control, wireless communications, and hardware.
- Two generations of award winning robots were built from scratch within these two years.
- Researcher, developer and leader roles were played.

*Research Assistant, Neuroimaging Laboratory*

**August 1999 to February 2001**

- Research on computer vision and medical imaging.
- Development of a semi-automatic segmentation and classification tool for medical images.
- Contributions from undergraduate-thesis research project were published and presented on international conferences and journals.

*Teacher Assistant*

**August 1998 to July 1999**

- Held laboratory sessions and tutorials.
- Contributed with software development for faculty's research projects.
- Provided assistance on a help desk.

SELECTED  
JOURNAL  
PUBLICATIONS

- Algorri, M.E.; Flores-Mangas, F., "Classification of anatomical structures in MR brain images using fuzzy parameters", IEEE Transactions on Biomedical Engineering, vol.51, no.9, pp. 1599-1608, Sept. 2004.
- Flores-Mangas F.; Algorri M.E.; Villaseor M., "A tool for analysis, segmentation and reconstruction of MR brain images", V Mexican Symposium on Medical Physics, American Institute of Physics Conference Proceedings, Juriquilla, Querquaro, Mexico, pp. 107-114, March 2001.

SELECTED  
CONFERENCE  
PUBLICATIONS

- Flores-Mangas, F.; Jepson, A. "Fast Rigid Motion Segmentation via Incrementally-Complex Local Models", In Proceedings of the Computer Vision and Pattern Recognition conference (CVPR), Portland, Oregon, USA, 2013
- Flores-Mangas, F.; Jepson, A.; Haider, M. "Shape-Based Registration of Kidneys Across Differently Contrasted CT Scans", In Proceedings of the 9th Computer and Robot Vision conference (CRV), Toronto, ON, Canada, 2012
- Oliver, N.; Flores-Mangas, F. 2006. "MPTrain: a mobile, music and physiology-based personal trainer". In Proceedings of the 8th Conference on Human-Computer interaction with Mobile Devices and Services. MobileHCI '06, vol. 159. ACM Press, 21-28. Helsinki, Finland, September 12 - 15, 2006. *Best paper nominee.*

- Oliver, N.; Flores-Mangas, F. “HealthGear: A real-time wearable system for monitoring and analyzing physiological signals”. In Proceedings of the international Workshop on Wearable and Implantable Body Sensor Networks (BSN’06) - Volume 00. IEEE Computer Society, Washington, DC, 61-64. April 03 - 05, 2006.
- Villasenor, M.A.; Flores-Mangas, F.; Algorri, M.E., “Anatomical models for virtual reality and web-based applications”, Engineering in Medicine and Biology Society, Proceedings of the 23rd Annual International Conference of the IEEE , vol.4, no., pp. 3769-3772 vol.4, 2001

Please refer to my [Google Scholar](#) for a comprehensive list of publications.

## PATENTS

- US Patent # 20070113725, Oliver, Nuria Maria; Flores-Mangas, Fernando;, “Algorithm for providing music to influence a user’s exercise performance”, May, 2007.
- US Patent # 20070113726, Oliver, Nuria Maria; Flores-Mangas, Fernando;, “Using music to influence a person’s exercise performance”, May, 2007.
- US Patent # 20070118043, Oliver, Nuria Maria; Flores-Mangas, Fernando;, “Algorithms for computing heart rate and movement speed of a user from sensor data”, May, 2007.
- US Patent # 20070027367, Oliver, Nuria Maria; Flores-Mangas, Fernando; Howard, Dane Michael; Lang, Eric G.; Sanchez, Russell I.; Sinclair, Michael Jack; Tan, Alfred Yong-Hock; Thompson, Ralph Donald III;, “Mobile, personal, and non-intrusive health monitoring and analysis system”, February, 2007.

## PROFESSIONAL EXPERIENCE

### **Vision Consulting**, Mexico City, Mexico

*Software Engineer*

**March to July 2002**

- Insurance Policy Management System, multi-user optimization.
- Contributions on improving the application’s performance.
- Management of a small team.

### **Artesoft**, Mexico City, Mexico

*Software Engineer*

**June to Aug 2001**

- Call-center real-time information system. Oversized LED-display fed from a telephone switch.

## TECHNICAL SKILLS

- Over 20 years of experience in C++ for Computer Vision and Machine Learning.
- Multi-threaded parallel programming.
- Real-time interactive graphical user interfaces (with OpenGL).
- Hardware design: from PCB circuit boards to robots that play soccer as a team, to consumer-grade 3D photo booths.
- Advanced knowledge of Matlab (as a prototyping tool).
- Experience with mobile devices and wearables (design, construction, power usage, wireless communications, data analysis).
- Knowledge of Python, Lisp, ADA, SQL, HTML, Java, assembler and others.