
Education

PhD in Electrical Engineering and Computer Science

University of California, Merced.

Thesis topic: **"Full-body mocap-based motion planning for autonomous characters"**

Supervisor: Prof. *Marcelo Kallmann*, Director of Computer UC Merced Computer Graphics Lab.

Summary: My project is about the generation of human-like motion. Using a Machine Learning approach, I extract motion features of Motion Capture data to create autonomous character controllers for real-time applications and Motion Planners.

Bachelor in Computer Science, Universidad de Guanajuato, Guanajuato, Mexico,

Thesis work: **"Implementation of a machine learning scheme for humanoid motion generation"**

Publications

- *A Coordination Model for Full-Body Interactions while Walking*, submitted to Transactions on Graphics (TOG). *On review process.*
- *Fast Behavioral Locomotion with Layered Navigation Meshes*, Interactive 3D Graphics and Games (I3D), [2018](#).
- *Coordinating Full-Body Interactions with the Environment*, Symposium on Computer Animation (SCA), [2017](#)
- *Full-Body Behavioral Path Planning in Cluttered Environments*, Motion in Games (MIG), [2016](#)
- *Modeling Data-Based Mobility Controllers with Known Coverage and Quality Properties*, Digital Human Modeling, [2016](#)
- *Deformation, Parameterization and Analysis of a Single Locomotion Cycle*, Motion in Games (MIG), [2014](#)

Experience

- **Visiting Research Assistant**, USC Institute for Creative Technologies. Summer 2014
Duties: developed and integrated a locomotion engine for SmartBody characters, performed research on the topic, which generated a poster paper published at MIG.
- **Teaching Assistant**
 - *Computer Graphics*: University of California, Merced: Fall 2013, Fall 2015, Spring 2017, Spring 2018; Universidad de Guanajuato: Spring 2010, Spring 2012.
 - *Algorithm Design and Analysis*: University of California, Merced: Fall 2017; Universidad de Guanajuato: Fall 2010, Spring 2011, Fall 2011.
- **Fellow Assistant**, at the University of Texas, Dallas Summer 2010
Duties: Collaborated as a programmer in a Calculus educational videogame.

Skills

Computing: 10+ years of experience in C/C++, OpenGL, GLSL, OpenCV, Qt. Advanced user of Operative Systems (Windows, Mac OSX, Linux). Experience on git, subversion, Motion Capture data, Motion Builder, Python and Maya Embedded Language.

Mathematics: College level knowledge in Vector Calculus, Real and Complex Analysis, Differential Equations, Linear Algebra, Abstract Algebra, Probability and Statistics.

Scientific software: MATLAB, R project, Wolfram Mathematica, LaTeX.

Languages: Proficient at Spanish and English.

Paper reviewer: The Visual Computer, Eurographics, International Conference on Robotics and Automation (ICRA), IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), Symposium on Computer Animation (SCA), Motion in Games (MIG), Computer Animation and Virtual Worlds, Conference on Computer Animation and Social Agents (CASA), Symposium on Interactive 3D Graphics and Games (I3D), Intelligent Virtual Agents (IVA), Workshop on the Algorithmic Foundations of Robotics (WAFR).

Other: Teamwork, Problem-solving and leadership

Honors and Awards

- **UC MEXUS-CONACYT Doctoral Fellowships for Mexican Students**
- **CIMAT's** full-scholarship for living expenses 2007-2012
- **Academic Honored Student UG** award received for 4 years (2008, 2009, 2010, 2012)
- 9th Place in **ACM International Collegiate Programming** regional phase 2009
- 2nd Place in **Mexican Mathematics Olympiad** 2006