

# FRANCISCO MERCADO

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## EDUCATION

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**University of Wisconsin-Madison**, December 2015  
Bachelor of Science, *Mechanical Engineering*, 3.70/4.00  
Bachelor of Science, *Applied Mathematics*, 3.10/4.00  
Certificate, *Computer Science*, 3.80/4.00  
Overall GPA: 3.614/4.000

## WORK EXPERIENCE

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<b>Simulation Based Engineering Lab (SBEL)</b> , <i>Research Assistant</i> , Madison, WI Generated demos based on experiments from scientific journals (Nature) using an in-house physics engine, CHRONO. Demos include: Synchronization of a system of coupled oscillators (metronomes) Locomotion of a six-legged robot on granular terrain Mixing of sand-like particles in a rotating barrel	Dec 2012 – Dec 2015
<b>Directional Striping Company</b> , <i>General Laborer</i> , Sun Prairie, WI Preparation and asphalt sealing parking lots and driveways.	May 2015 – Oct 2015
<b>Elizabeth Waters Dining Hall</b> , <i>Team Member</i> , Madison, WI Server, Cashier, Chef's Assistant, Dishroom, Supply Transportation.	Aug 2011 – Dec 2012

## PROGRAMMING LANGUAGES

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**C:** 14 mechatronics labs with an ATmega2560 including: Fixed point PID & DDA stepper motor control  
**C++:** CHRONO demos written in C++  
**MATLAB:** Created a 2D physics engine for kinematic and dynamic simulation of machine systems  
**Java:** Character recognition of handwritten digits through neural network, Open Street Map A\* path finder  
**EES (Engineering Equation Solver):** Analysis of thermodynamics, fluid dynamics, and heat transfer systems  
**Python:** Vigenère cypher cracker, YouTube channel video archiving, Mastermind Game (AI in progress)  
**Maple:** Static and Dynamic structural analysis  
**Fortran:** Introductory knowledge

## ACCOMPLISHMENTS

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<b>Lindbergh Lecture Presentation</b> Presented my research from the summer of 2013 at SBEL to UW-Madison Mechanical Engineering graduate students and faculty	Sep 2013
<b>Recognition of Outstanding Student Employee (ROSE) Award</b> Award presented to the top 1% of housing employees (17 of 1700)	Mar 2012
<b>Dean's List of Distinguished Students</b>	Fall 2011 – Fall 2015
<b>Grainger Engineering Scholarship</b>	Aug 2012 – May 2015

## COURSEWORK OF INTEREST

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Introduction to Artificial Intelligence | Cryptography | Linear Programming Methods  
Artificial Intelligence in Robotics (Udacity)  
Kinematics and Dynamics of Machine Systems | Dynamic Systems  
Mechatronics in Control & Product Realization | Electro-mechanical Power Conversion  
Heat Transfer | Fluid Dynamic | Thermodynamics  
Applied Mathematical Analysis | Linear Algebra | Differential Equations