FRANCISCO MERCADO

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EDUCATION

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

COURSEWORK OF INTEREST

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

WORK EXPERIENCE

Mandli Communications (Roadview), *Field Systems Operator*, Madison, WI — June 2016 – Present
Operation, troubleshooting, and validation of pavement surveying systems: GPS, lidar, laser measurement, panoramic cameras. Fulfilled contracts for OK, IL, DE, MD, and HI DoTs.

Simulation Based Engineering Lab (SBEL), *Research Assistant*, Madison, WI — Dec 2012 – Dec 2015
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

Directional Striping Company, *General Laborer*, Sun Prairie, WI — May 2015 – Oct 2015
Preparation and asphalt sealing parking lots and driveways.

Elizabeth Waters Dining Hall, *Team Member*, Madison, WI — Aug 2011 – Dec 2012
Server, Cashier, Chef's Assistant, Dishroom, Supply Transportation.

PROGRAMMING LANGUAGES

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
Perl: Several game bots using Simba (formerly Scar)

ACCOMPLISHMENTS

Lindbergh Lecture Presentation — Sep 2013
Presented my research from the summer of 2013 at SBEL to UW-Madison Mechanical Engineering graduate students and faculty

Recognition of Outstanding Student Employee (ROSE) Award — Mar 2012
Award presented to the top 1% of housing employees (17 of 1700)

Promoting the Computational Science Initiative (ProCSI) — July 2013 – July 2014
Recruited, organized, and chaperoned a summer camp allowing under-represented high school students interested in engineering topics to experience tours, lab modules, and panels.

Dean's List of Distinguished Students (all semesters) — Fall 2011 – Fall 2015

Grainger Engineering Scholarship — Aug 2012 – May 2015