CARLOS ISAAC ESPINOSA RAMÍREZ

Address: 251 Cardiff Pl. Santa Cruz, CA, 95060
Mobile: (702) 354-4665
E-mail: caiespin@ucsc.edu
Web: https://www.linkedin.com/in/carlosisaacespinosa

Education

2017 - Currently **Ph.D. in Computer Engineering**
University of California Santa Cruz, Autonomous Systems Lab
Research focused on the development of algorithms for UAV navigation in GPS denied environments.

2013 - 2016 **M.Sc. in Autonomous Aerial and Submarine Navigation Systems**
Center for Research and Advanced Studies of the National Polytechnic Institute
Thesis: "*Design and Implementation of the Control of a Two DoF Gimbal*"

2008 - 2012 **B.E. in Automation and Control**
School of Mechanical and Electrical Engineering, National Polytechnic Institute
Thesis: "*Automation Proposal for a palletizing Cell using RobotStudio for the Industrial Robot ABB IRB460 Simulation*"

2004 - 2008 **Technician in Machines with Automated Systems**
Center for Scientific and Technological Studies No. 9 "Juan de Dios Batiz", National Polytechnic Institute

Work Experience

June 2018 – Sept 2018 **The MathWorks**
Software Engineer Intern
- Developing Python scripts to improve the machine translation process for the MATLAB documentation.

Jan 2018 – June 2018 **University of California Santa Cruz**
Teaching Assistant (Computer Systems and Assembly Language)
- Taught three sections per week for helping students learn the course material.
- Run MOSS copy detection software on student's labs.

June 2016 – July 2017 **Panasonic of Mexico**
Technical Support Engineer
- Main engineer supporting Authorized Service Centers at national level for the category of Air Conditioner and home appliances.

Feb 2016 – June 2016 **Technological Institute of Tlalnepantla**
Instructor
- Taught undergraduate-level engineering courses on Micro-controllers and Analog Electronics.

Jan 2015 - June 2015 **Mexican Navy Research Center (INIDETAM)**
Research Intern
- Design and programming the electronic System of a gyro-stabilized camera (Results used to obtain the master's degree).

Academic Experience

2017 Five weeks final project for the UCSC Mechatronics class. Development of a small autonomous robot with the ability of effectively and robustly navigate a standardized field while capable of reliably solving a task.

2015 - 2016 Control design of a Two Axes Gimbal System Applying Advanced Control Techniques.

October 2015 Organizer at the Third Mexican Symposium of Aerial Autonomous Vehicles
Activities: Logistics and planning of activities for the organization of a symposium for 200 people, in addition to the coordination and organization on the days of the event.

2012 - 2013 Design and development of a low-cost six DOF Robotic Arm.

2011 - 2012 Design of an Industrial Robotic Palletizing Cell using RobotStudio®.

2008 Design and fabrication of mechanical parts using CNC machines.

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Publications

"Sliding mode line-of-sight stabilization of a two-axes gimbal system"
C. Espinosa, K. Mayen, M. Lizarraga, S. S. H. Romero and R. Lozano,
2015 Workshop on Research, Education and Development of Unmanned Aerial Systems (RED-UAS), Cancun, 2015, pp. 431-438.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7441037&isnumber=7440980

"Real-time video stabilization algorithm based on efficient block matching for UAVs"
K. Mayen, C. Espinosa, H. Romero, S. Salazar, M. Lizarraga and R. Lozano,
2015 Workshop on Research, Education and Development of Unmanned Aerial Systems (RED-UAS), Cancun, 2015, pp. 78-83.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7440993&isnumber=7440980

Recognitions

2017 - Currently	National Council of Science and Technology Scholarship (Mexican NSF)
2013 - 2015	National Council of Science and Technology Scholarship (Mexican NSF)
2012	Training Program for Researchers of the National Polytechnic Institute fellowship
2009 - 2012	Alfredo Harp Helú Foundation Scholarship
2009	Academic Excellence Program of the National Polytechnic Institute. Recognition for the GPA obtained in the first and second semester of the Bachelor of Engineering in Automation and Control.

Languages

Spanish:	Reading: Native	Writing: Native	Speaking: Native
English:	Reading: Advanced	Writing: Advanced	Speaking: Advanced
French:	Reading: Intermediate	Writing: Intermediate	Speaking: Intermediate
German:	Reading: Basic	Writing: Basic	Speaking: Basic

Skills

Programming Languages:

C	Experienced	**MATLAB**	Experienced
C++	Familiarity	**MIPS Assembly**	Familiarity
Python	Experienced		

Software/Libraries: MATLAB and Simulink Tools (Familiar with the PX4 PSP for Simulink), OpenCV, Linux/UNIX, MPLAB, RobotStudio, Microsoft Office Suite.

Prototyping: PCB layout design: Eagle, Proteus Design Suite, Altium.
Mechanical Design: Solidworks, AutoCAD and Inventor, Experience using machine tooling (Manual and CNC Lathe, Milling machine and Laser cutter).

Embedded Systems: PIC, DsPIC, CAN, I2C, UART, SPI, Sensor integration, Experience with single-board computers Raspberry Pi and Gumstix, Familiarity with the Pixhawk PX4 platform.

Robotics Engineering: Feedback Control, Computer Vision, Camera Inertial stabilization, UAV's, Simulation, Familiarity with ROS and Gazebo.

Electrical Engineering: Sensor Design, Analog Filter Design, Signal conditioning.

Computer Engineering: Computer Architecture, Digital Logic Design, VLSI System Design.

Computational and Applied Mathematics: Modeling, Control Theory, Linear Dynamical Systems, Frequency Domain & State Space Analysis.