

# FRANCISCO (CISCO) ZABALA

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## EXPERIENCE

### Data Scientist, Remote Sensing & Computer Vision

Jul 2022 – Present

*Amazon Web Services (AWS)*

*Remote, CA*

- Developing satellite imagery Deep Learning solutions for Public Sector customers
- Leading R&D efforts in self-supervised learning for object detection in geospatial applications

### Senior Data Scientist

Feb 2022 – Mar 2022

*Walmart Global Tech*

*Remote, CA*

- Architected end-to-end object tracking solutions spanning three product verticals

### Deep Learning Researcher

Aug 2021 – Feb 2022

*Walmart Store No. 8*

*Remote, CA*

- Developed heuristic and deep learning algorithms for shelf availability and planogram compliance of products

### Founder

Jun 2013 – Jul 2021

*ACROBOTIC*

*Pasadena, CA*

- Led a team of engineers to develop and deliver custom IoT products to a broad customer base
- Supported customer adoption of IoT products ranging from DIYers to National Lab engineers

### Machine Learning Engineer

May 2012 – May 2013

*IO Rodeo*

*Pasadena, CA*

- Designed custom lab instrumentation for high-throughput studies of fruit fly behaviors
- Developed Control and Human-Machine interfaces for interactive lab instruments

## EDUCATION

### California Institute of Technology

Pasadena, CA

*PhD Candidate (all but dissertation)*

May 2011 – May 2013

*Master of Engineering*

Aug 2009 – May 2011

### California State University, Fullerton

Fullerton, CA

*Bachelor of Science in Electrical and Computer Engineering*

Aug 2003 – May 2007

## SELECTED PROJECTS

### Object Detection in Satellite Imagery | *Python, Amazon SageMaker, PyTorch, AWS*

- Developed custom algorithms for experimenting with pre-training strategies for object detection

### Perpetual Inventory | *Python, Android, PyTorch, TensorFlow, GCP*

- Combined heuristics and Convolutional Nets on edge devices to detect retail products in real-time

### Robot-Fly Interactions | *Python, ROS, Arduino (C++)*

- Developed a vision-based, real-time apparatus for quantifying interactions between real and robotic flies
- Publication: <https://pubmed.ncbi.nlm.nih.gov/22727703/>

### Insect Flight Kinematics | *Python, MATLAB*

- Built a high-speed, high-throughput videography apparatus for imaging wing and body motion of insects
- Applied unsupervised learning algorithms to quantify insect flight kinematics
- Publication: <https://pubmed.ncbi.nlm.nih.gov/19376952/>

### DARPA Urban Challenge | *C++, Electromechanical Hardware*

- Implemented vision-based algorithms for vehicle navigation in urban environments
- Contributed to electromechanical retrofitting of our team vehicle's hardware for driverless operation

## TECHNICAL SKILLS

**Languages:** Java, Python, C/C++, JavaScript, HTML/CSS, MATLAB

**Developer Tools:** Git, Docker, Google Cloud Platform, VS Code, Visual Studio, PyCharm, AWS Cloud, GCP

**Libraries:** Pandas, NumPy, Matplotlib, Keras, TensorFlow, PyTorch