

FRANCISCO (CISCO) ZABALA

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EDUCATION

California Institute of Technology

PhD Candidate

Master of Engineering

Pasadena, CA

May 2011 – May 2013

Aug 2009 – May 2011

California State University, Fullerton

Bachelor of Science in Electrical and Computer Engineering

Fullerton, CA

Aug 2003 – May 2007

EXPERIENCE

Senior Data Scientist

Walmart Global Tech

Feb 2022 – Mar 2022

Remote, CA

- Combined Neural Nets for Object Tracking with SLAM methods to build in-store *planograms*
- Architected End-to-End Machine Learning solutions spanning three product verticals
- Devised scaling strategies for deploying a CV-based Inventory Tracking System across 4700+ stores

Deep Learning Researcher

Walmart Store No. 8 (Incubator)

Aug 2021 – Feb 2022

Remote, CA

- Contributed to the fastest project to graduate into **Walmart Global Tech**
- Implemented heuristic algorithms for determining On-Shelf Availability of retail products
- Trained Neural Net ensembles for Object Detection and Object Tracking in densely packed images

Founder

ACROBOTIC

Jun 2013 – Jul 2021

Pasadena, CA

- Managed a technical apprenticeship program in partnership with two local community colleges
- Launched and successfully delivered 3 hardware products on Kickstarter
- Created tutorials and demos on YouTube growing an audience of 30k+ subscribers

Machine Learning Engineer

IO Rodeo

May 2012 – May 2013

Pasadena, CA

- Manufactured custom lab instrumentation for behavioral studies of fruit flies
- Developed Control and Human-Machine interfaces for interactive lab instruments
- Designed custom PCBs and mechanical assemblies using ECAD/CAD software

PROJECTS

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

- Combined heuristic algorithms and Convolutional Nets to detect and classify retail product images 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

- Developed a high-speed videography apparatus for imaging wing and body motion of insects
- Implemented Unsupervised Learning methods (k-means clustering) for quantifying insect flight kinematics
- Publication: <https://pubmed.ncbi.nlm.nih.gov/19376952/>

DARPA Urban Challenge | C++, Electromechanical Hardware

- Implemented a vision-based algorithm for our team vehicle to perform k-turns
- Assisted in 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

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