

# Leo Neat

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## EDUCATION

### UC SANTA CRUZ

#### BS IN COMPUTER SCIENCE

Expected May 2019 | Santa Cruz, CA  
Conc. in Software Engineering  
Jack Baskin School of Engineering  
Dean's List (All Semesters)  
Cum. GPA: 3.92 / 4.0

### LA CANADA HIGH SCHOOL

Grad. May 2015 | Pasadena, CA

## COURSEWORK

### GRADUATE

Computer Vision and Image Processing  
Advanced Algorithm Analysis

### UNDERGRADUATE

Machine Learning  
Advanced Programming  
Comparative Programming Languages  
Probability and Statistics  
Computer Systems  
Assembly Language  
Discrete Math  
Data Structures  
Linear Algebra  
Vector Calculus

## SKILLS

### PROGRAMMING

Over 5000 lines:

Java • Python • Android •  $\text{\LaTeX}$

Over 1000 lines:

C • C++

Familiar:

TensorFlow's Object Detection API •  
Keras • OpenCV • SQLite • Shell •  
Arduino

## EXPERIENCE

### AQUIFI | SOFTWARE ENGINEERING INTERN

June 2018 – Sep 2018 | Palo Alto, CA

- Developed a software system that allows users to quickly offload data from Aquifi devices to different servers for quality assurance, regression testing, training, etc...
- Wrote, tested, and modified system level camera code that ended up in production
- Developed an algorithm to detect corrupted frames in camera streams and recover the streams if necessary

### JET PROPULSION LABORATORY | SOFTWARE ENGINEERING INTERN

Software Architect Intern for WFIRST Mission | Summer 2017

- Designed and built a software and hardware system that utilizes an Android phone to emulate a star for EMCCD camera testing
- The camera characterization system is currently being used by different teams at NASA for spaceflight detector evaluation
- Saved NASA thousands of dollars in development cost and months of testing time

### Software Engineer for Earth Facing Telescopes | Summer 2016

- Wrote code that implemented OpenCV's tracking methods in order to determine cloud heights for weather prediction
- Researched different forms of feature detection and optical flow in order to solve a stereo problem apparent in MISR's images

### Software Engineering Intern for WFIRST Mission | Summer 2015

- Multi-threaded a telescope testbed initialization which reduced its startup speed by a factor of 14
- Developed an algorithm for detecting radiation corrupted segments in images taken with EMCCD cameras

### Software and Ground Truthing Intern | Summer 2014

- Created a Graphical User Interface which was utilized by JPL scientists for data manipulation and visualization of images
- Developed master class for multi-core processing system for use in JPL computer lab

## RESEARCH

### UC SANTA CRUZ COMPUTER VISION LAB | UNDERGRAD RESEARCH

December 2016 – Present | Santa Cruz, CA

- Developed a system that streams images from an Android device's camera to a server where it is processed by a CNN which returns the location and text in the image
- Created a human computer interaction interface that relays the information received by the Android phone from the server to a blind user
- Developing a system that can be used to test and compare the inference speed of TensorFlow Lite models on mobile devices and studying the costs and benefits of on-board vs. server side inference for mobile CNNs.

## PROJECTS

### **CROWD SIZE DETECTOR**

Developed a platform using Tensor-Flow's object detection API to monitor the number of people in a variety of public locations.

### **UCSC HACKATHON**

Wrote a Monte Carlo simulation to help predict the demand for each of the Computer Science Classes offered at UCSC. The program's goal was to help reduce the number of people unable to get into Computer Science classes.

## PUBLICATIONS

1. L. Neat, R. Peng, S. Qin, R. Manduchi "Bringing Transparency Design into Practice." 23rd International Conference on Intelligent User Interfaces. ACM, 2019.
2. Michael Bottom, Leo S. Neat, Leon K. Harding, Patrick Morrissey, Seth R. Meeker, Richard T. Demers "Smartphone scene generator for efficient characterization of visible imaging detectors", Proc. SPIE 10709, High Energy, Optical, and Infrared Detectors for Astronomy VIII, 107092R (6 July 2018); doi: 10.1117/12.2312335;
3. Harding, et al. "Technology Advancement of the CCD201-20 EMCCD for the WFIRST-AFTA Coronagraph Instrument: sensor characterization and radiation damage." Journal of Astronomical Telescopes, Instruments, and Systems 2.1 (2016): 011007-011007.