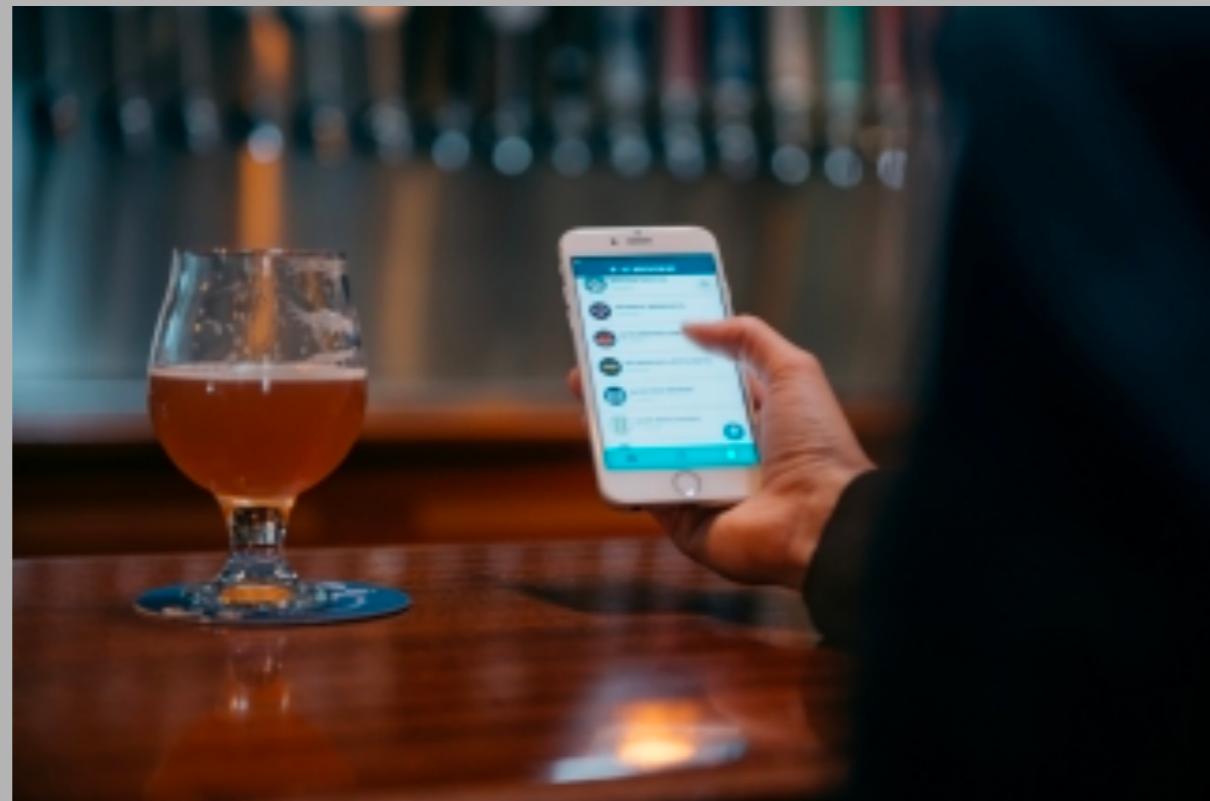


SIX-PIC



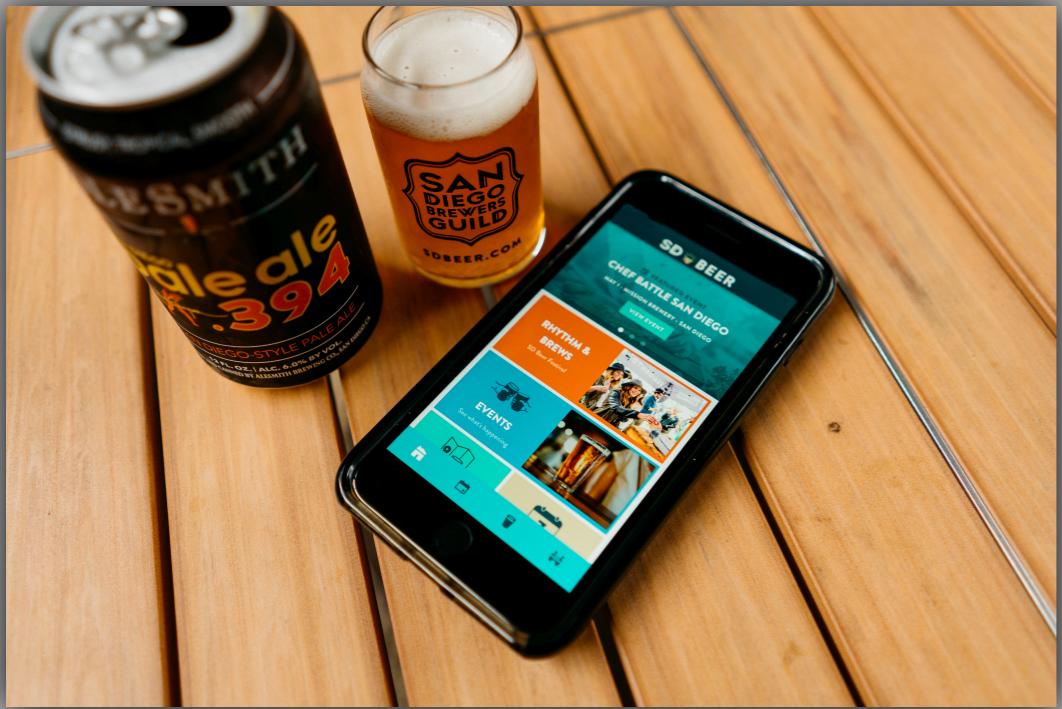
The Beer Labeler App that connects you to your favorite beverage



THE PITCH



- Six-Pic will allow users to interact with their favorite beers by taking pictures of a beer label on a bottle, can, keg or tap
- The app will then connect the user to information about the beer: ingredients, flavor profile, and near-by locations where the beer is sold
- While many apps have the same search functions, none have the ability to provide the same information by taking a picture of the label



KEEP IT LOCAL

- San Diego boasts over 200 breweries, while it has become a burgeoning tech destination in its own right
- San Diego's Brewers' Guild, the SDREDC and the Women's Craft Beer Collective are all organizations supporting San Diego's Craft Beer scene

COMPETITION/PARTNERSHIPS



- There are many apps that connect users to beer such as [Untappd](#), [TapHunter](#), and [BeerAdvocate](#)
- Six-Pic differs from these apps in that it allows users to immediately find information about the beer in front of them by employing machine learning to classify beers from a photo taken on a mobile device
- Six-Pic can be licensed to these companies for use in existing apps

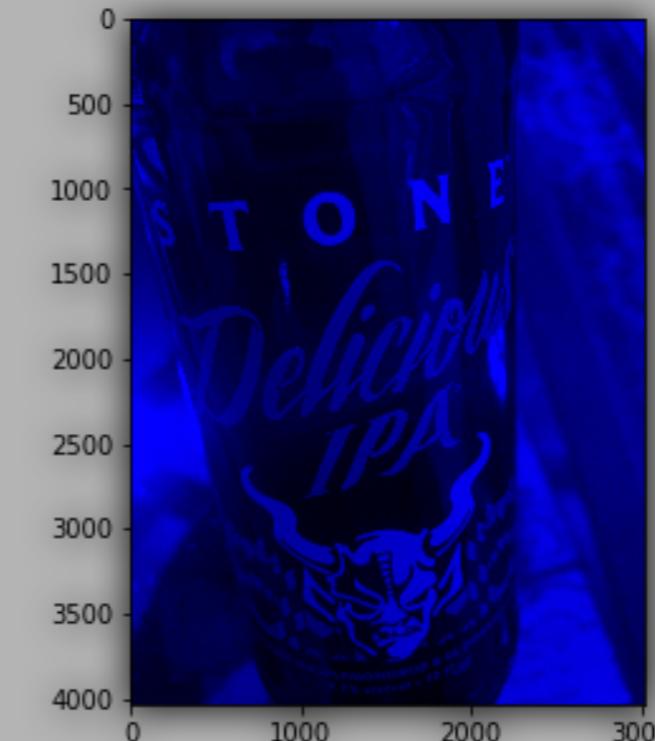
METHODOLOGY

- This report will focus on a concept program called **The Twelve Pack**
- The Twelve Pack aims to train a machine learning model to classify images from 12 beers
- Keras/Tensorflow will be used to train a Convolutional Neural Network model

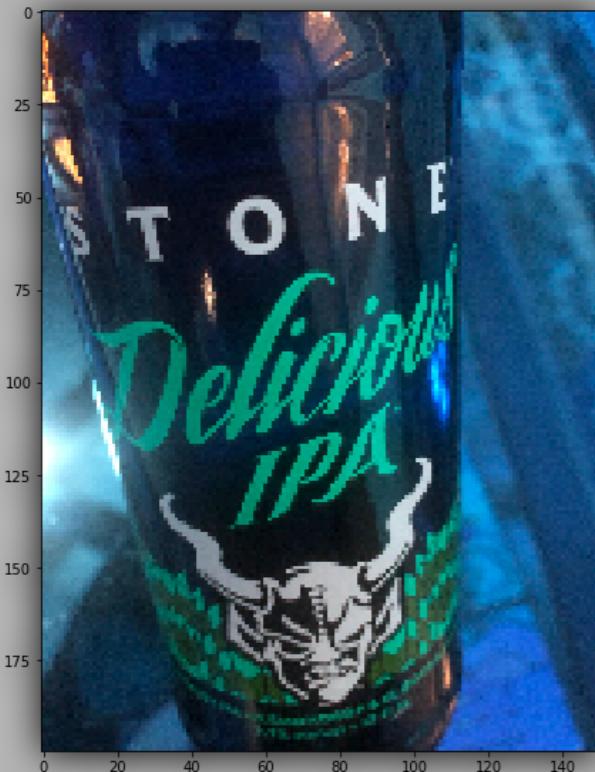
METHODOLOGY



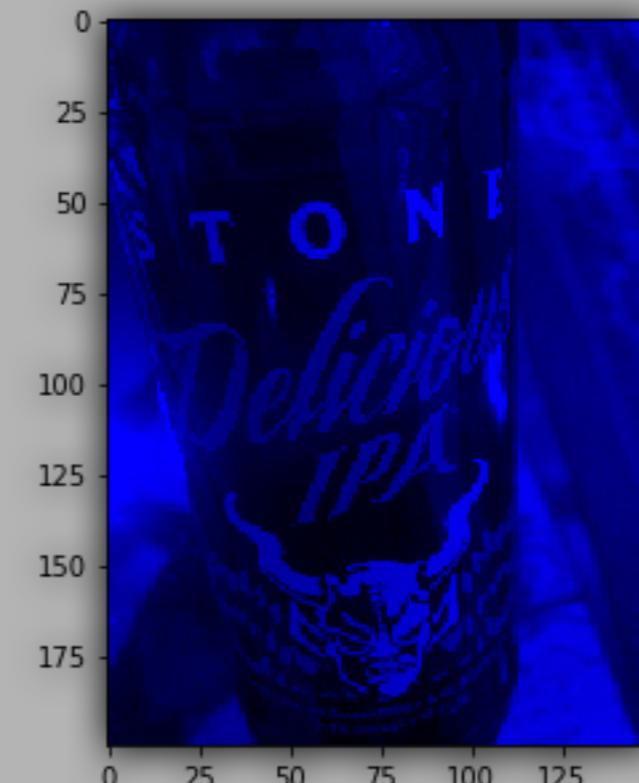
- All images taken on an iPhone 8 Plus
- Images converted from HEIC format to JPEG using the Automator App on a 2018 MacBook Pro
- 3 channel color images used to train model



METHODOLOGY



- The images are resized from 4032×3024 pixels to 200×150 pixels
- The resized images will maintain the same aspect ratio, while allowing the model to run faster on smaller images

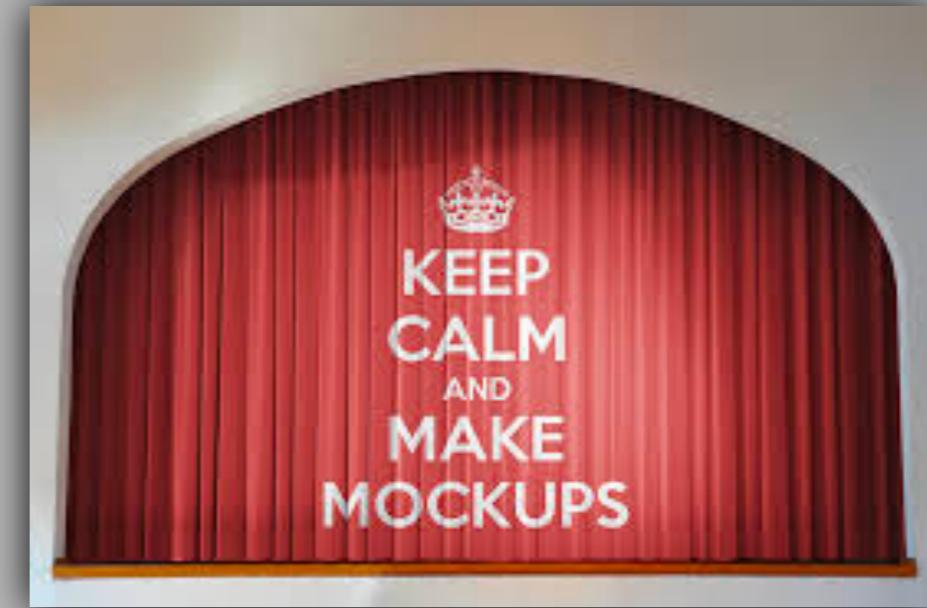




BEERS USED IN THE TWELVE PACK

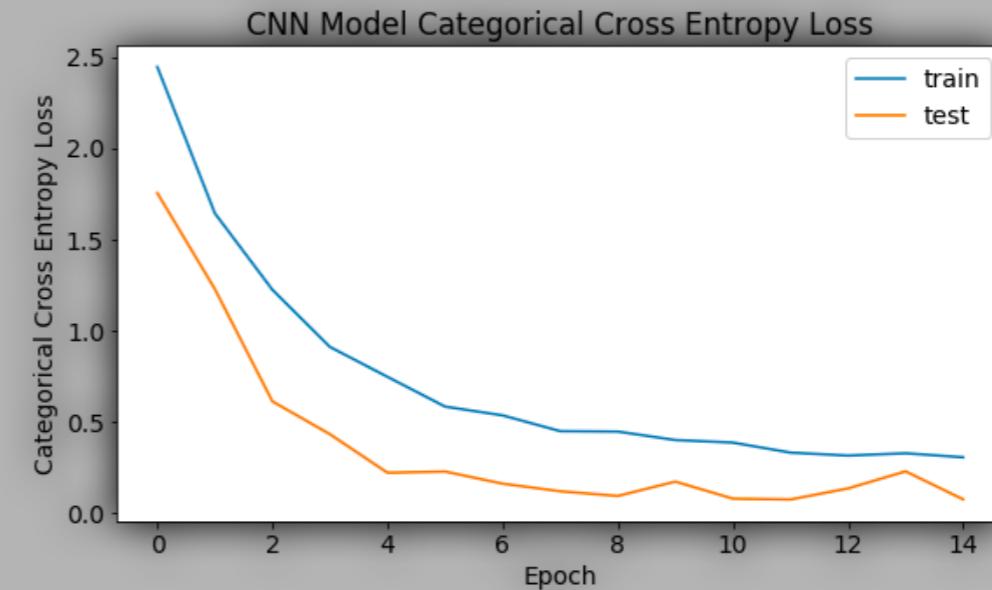
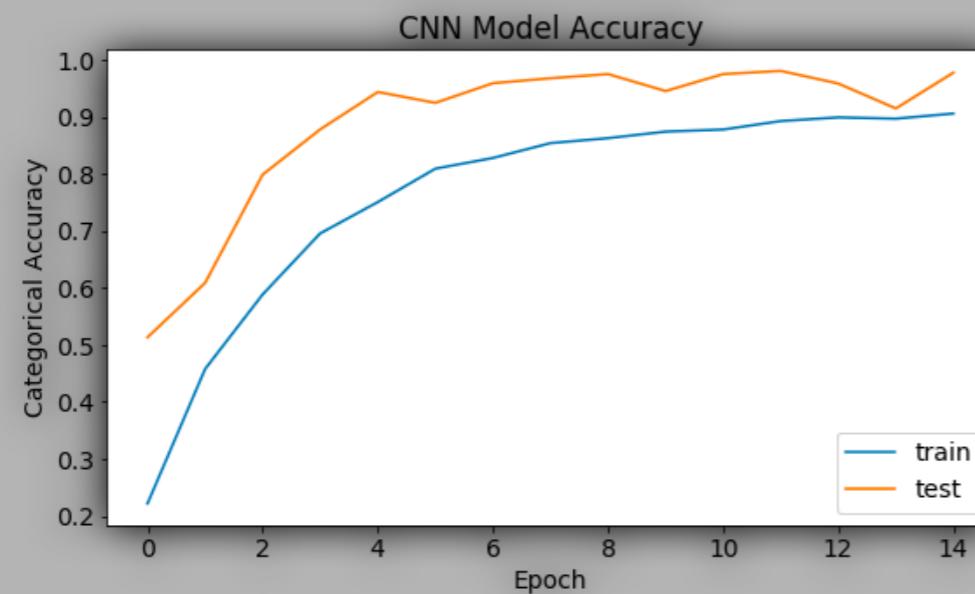
- **Sierra Nevada Pale Ale - Bottle**
- **Green Flash West Coast IPA - Bottle**
- **Lagunitas Secret Agenda - Bottle**
- **Pizza Port Swami's IPA - Can**
- **Coronado Mermaid's Republic - Can**
- **Modern Times Orderville - Can**
- **Stone Delicious IPA - Bottle**
- **Allagash White Belgian Ale - Bottle**
- **Alpine Duet - Bottle**
- **Aurora Hoppyalis - Bottle**
- **Ballast Point California Kolsch - Bottle**
- **Bear Republic Racer 5 - Bottle**

KERAS IMAGE DATA GENERATOR



- The Keras Image Data Generator is used because it allows the model to create altered images from the original
- This method will allow for the model to train on more beers in the future with little preparation

RESULTS



- The model shows stability and accuracy when classifying the twelve beers
- When tested on a holdout group from the original images, the model showed 13% accuracy
- While the model is not nearly accurate enough for production, the Twelve Packs shows that with more testing, the Six-Pic could be a successful image classification platform

RESULTS

- When tested on an iPhone image of Stone Delicious from the web, the model was able to classify the image as Stone Delicious and return the following information from [BreweryDB's API](#):

```
'name': 'Stone Brewing',  
  
'nameShortDisplay': 'Stone',  
  
'description': 'Founded by Greg Koch and Steve Wagner, Stone Brewing has come a long way  
since opening up in San Diego, California in 1996. We have been listed on the Inc 500 | 5000  
Fastest Growing Private Companies list 12 times, and has been called the "All-time Top  
Brewery on Planet Earth" by BeerAdvocate magazine twice. Stone Brewing is the ninth-largest  
craft brewer in the U.S. and with our breweries in Richmond, Virginia & Berlin, Germany, we  
join artisanal brewers across the world in the quest to show the public that there are  
more...and better...choices beyond the world of industrial beer.',  
  
'website': 'http://www.stonebrewing.com/',  
  
'established': '1996'
```

