Fruit Classification

Cristian M. Luna

Food Sharing and Donation Apps

Food Sharing and Donation Apps

- Search and Post Food

Food Sharing and Donation Apps

- Search and Post Food
- Upload Images

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Problem

Food Sharing and Donation Apps

- Search and Post Food
- Upload Images

Problem

- Manually Input Information

Food Sharing and Donation Apps

- Search and Post Food
- Upload Images

Problem

- Manually Input Information
- User error

Food Sharing and Donation Apps

- Search and Post Food
- Upload Images

Problem
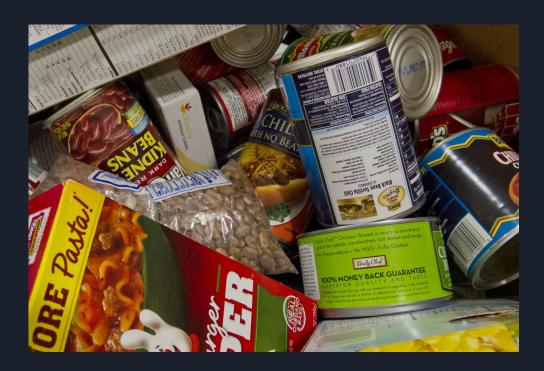
- Manually Input Information
- User error
- Food waste

Solution

Image Classification System

Why?

Why?

- Reduce user error

Why?

- Reduce user error
- Tags

Why?

- Reduce user error
- Tags
  - Easier Search

Why?

- Reduce user error
- Tags
  - Easier Search
  - Less Food Waste

Why?

- Reduce user error
- Tags
  - Easier Search
  - Less Food Waste
- User Images

Why?

- Reduce user error
- Tags
  - Easier Search
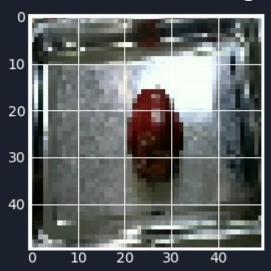 - Less Food Waste
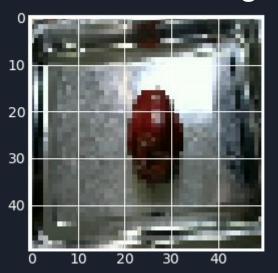- User Images
  - Better Model

Data

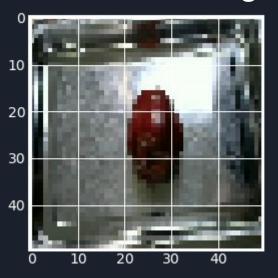Data

Kaggle

Data

Kaggle

- 44k Fruit Images

Data

Kaggle

- 44k Fruit Images

Kaggle

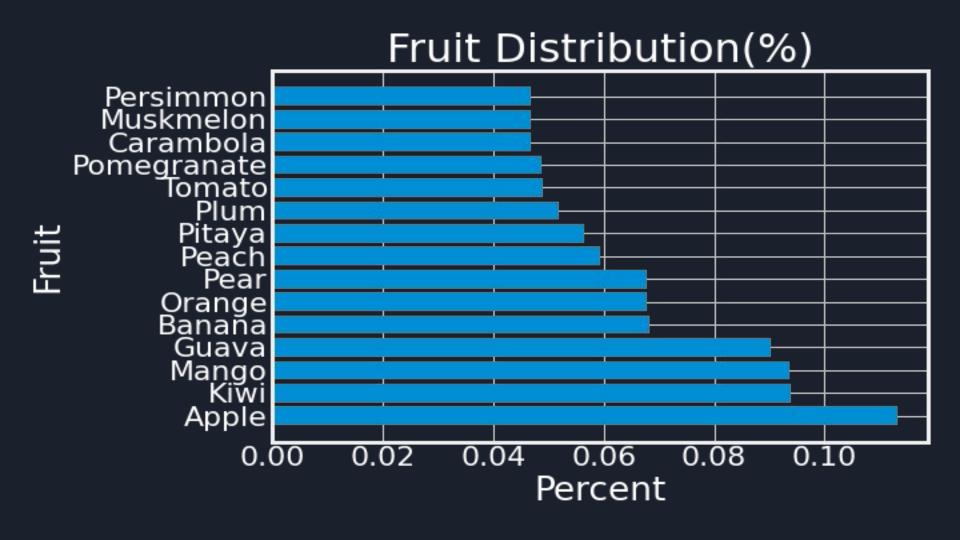- 44k Fruit Images

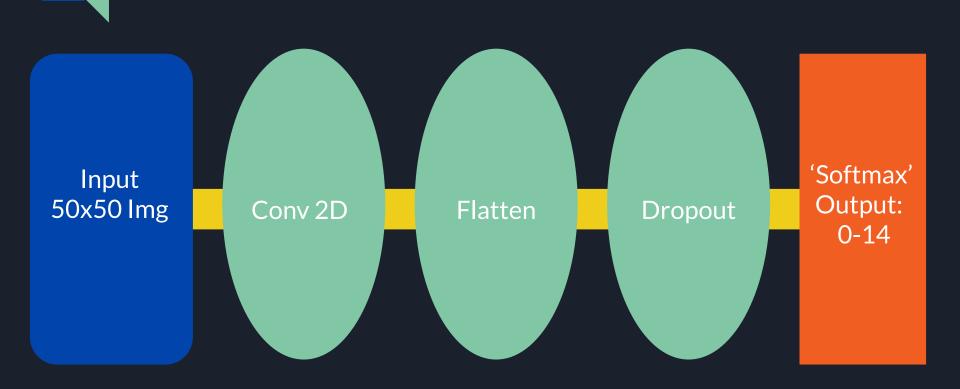

- 15 Types of Fruit
  - 2 - 5k Images

Data

Kaggle

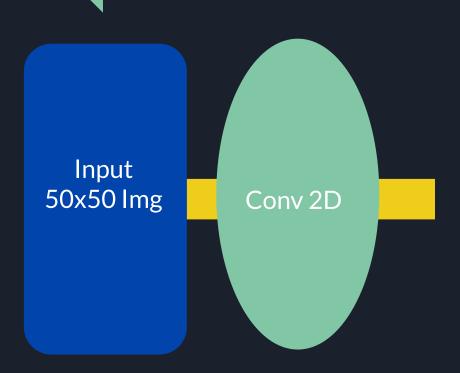● 44k Fruit Images

● 15 Types of Fruit
  ○ 2 - 5k Images
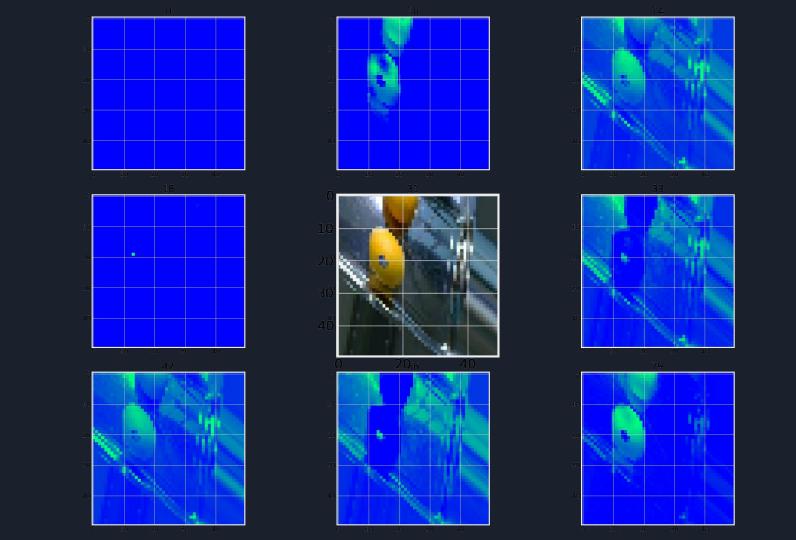
● Lighting, Positioning, and Quantity

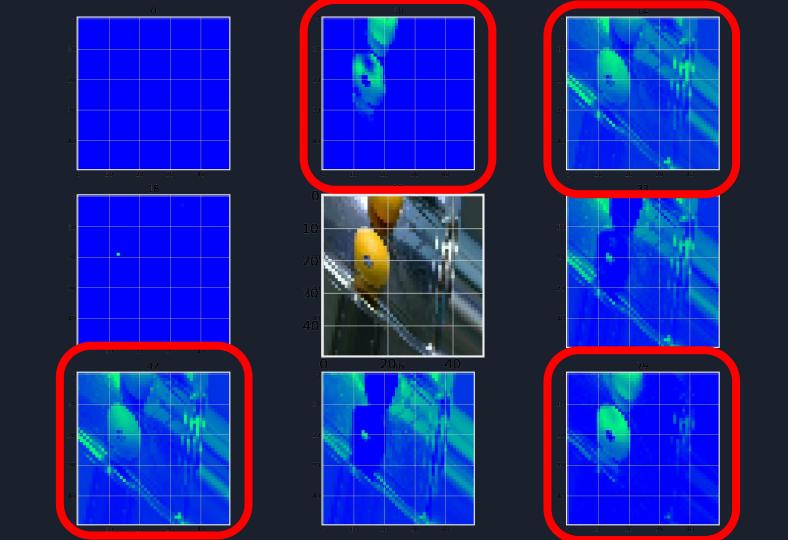Fruit Distribution(%)

My Neural Network

Input 50x50 Img — Conv 2D — Flatten — Dropout — 'Softmax' Output: 0-14

Neural Network

Input
50x50 Img

Neural Network

Input 50x50 Img

Conv 2D

Neural Network

Input
50x50 Img

Conv 2D

Neural Network

Input 50x50 Img — Conv 2D — Flatten

Neural Network

Input 50x50 Img — **Conv 2D** — **Flatten** — **Dropout** — **'Softmax' Output: 0-14**

Performance

Metrics

Precision: 96.33%

Metrics
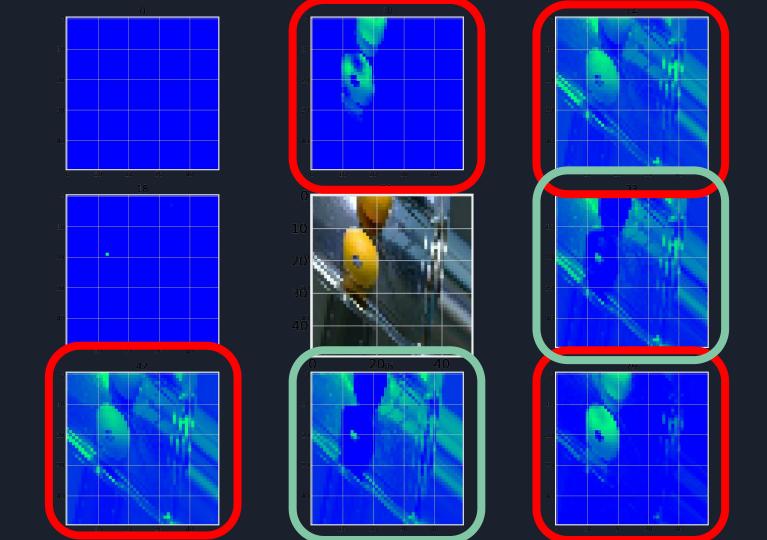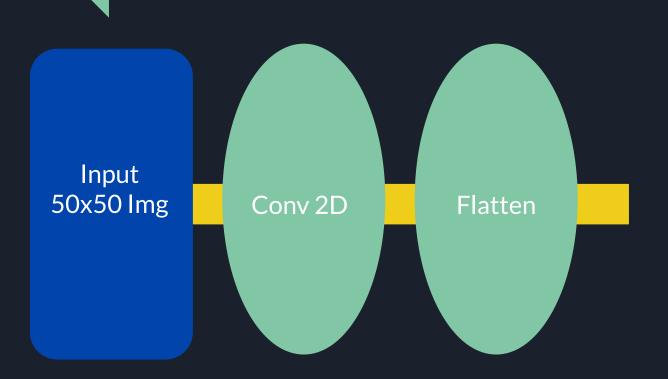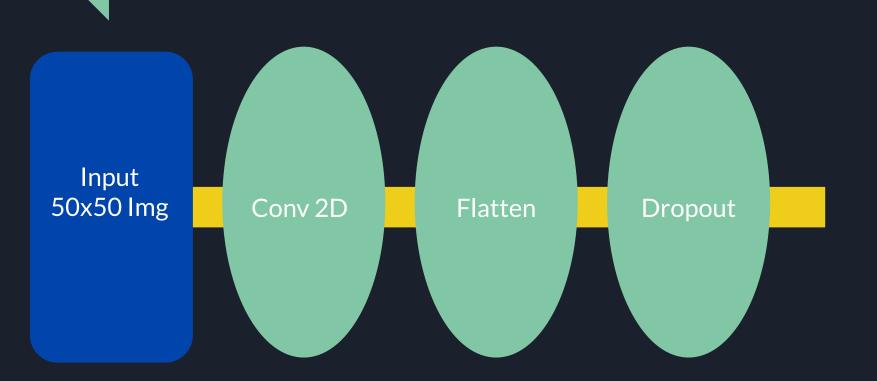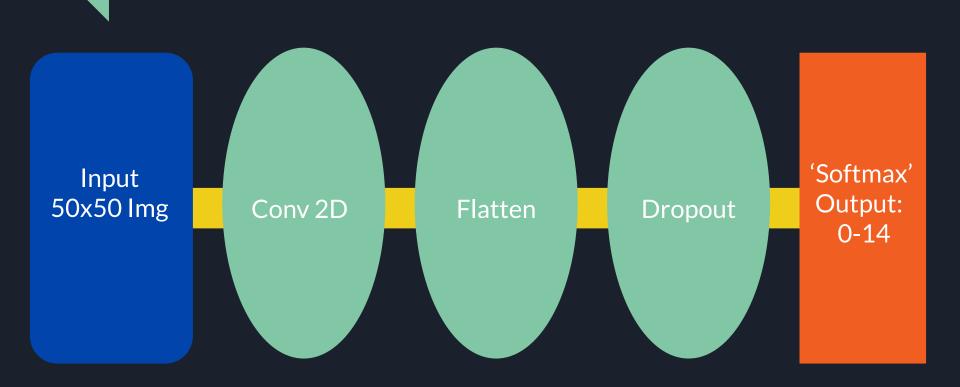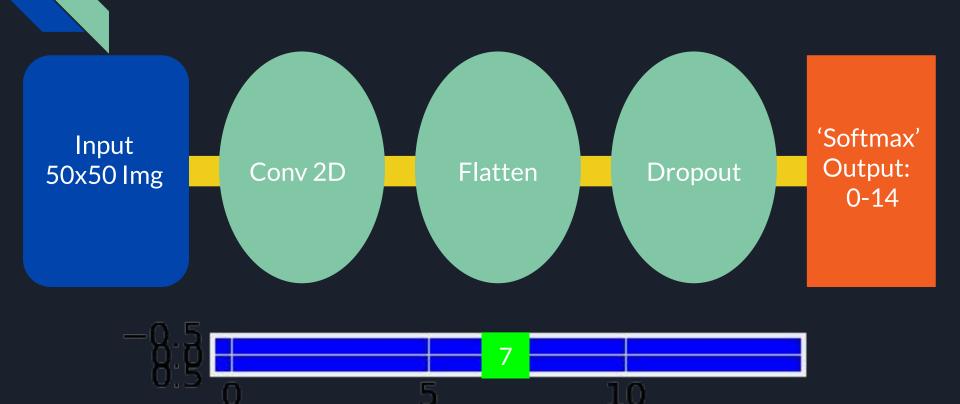
Precision: 96.33%

Recall: 96.13%

Metrics

Precision: 96.33%

F1: 96.17%

Recall: 96.13%

Metrics

Precision: 96.33%
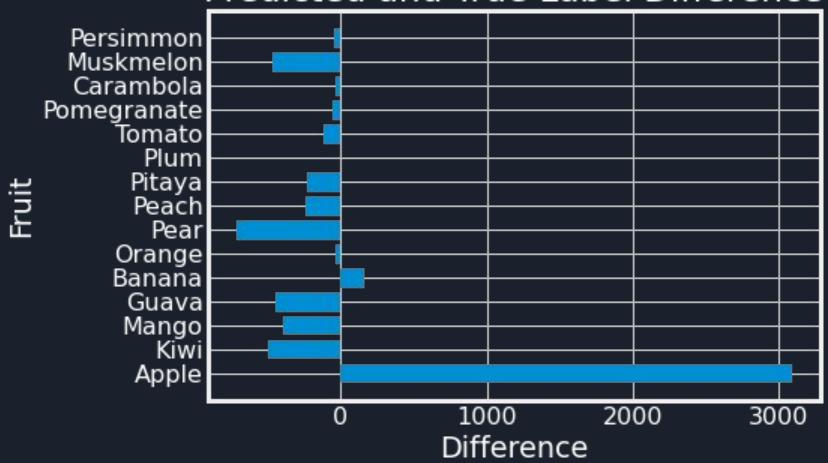
F1: 96.17%

Recall: 96.13%

Predicted and True Label Difference

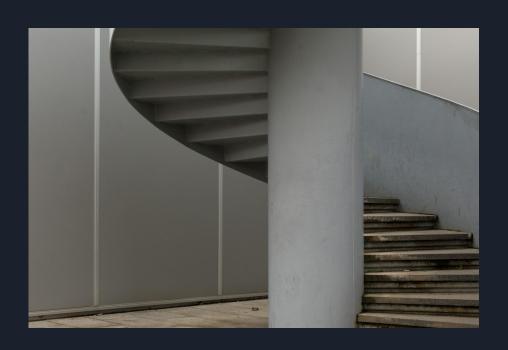# Example of Incorrect Prediction

Example of Incorrect Prediction

Actual: Apple

Example of Incorrect Prediction

Actual: Apple

Predicted: Muskmelon

Example of Incorrect Prediction

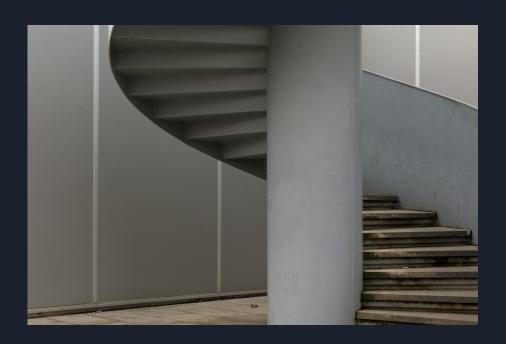Actual: Apple

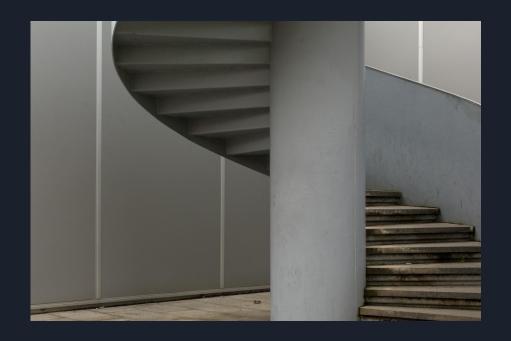Predicted: Muskmelon

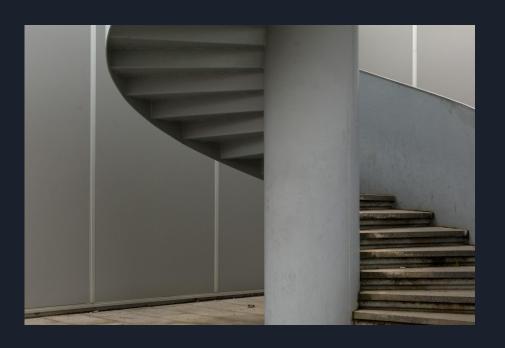# Next Steps

Next Steps

- Split Fruit into Subsets
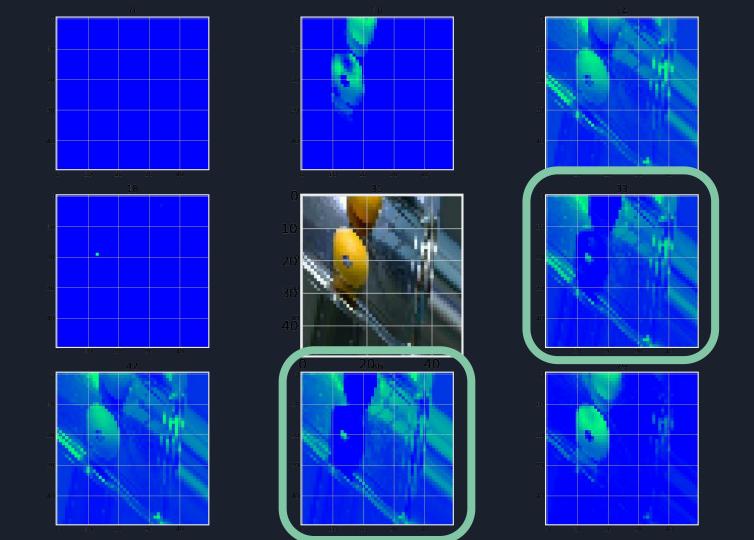
Next Steps

- Split Fruit into Subsets
- Run different:
  - Layers
  - Activation Alg's
  - Transformations
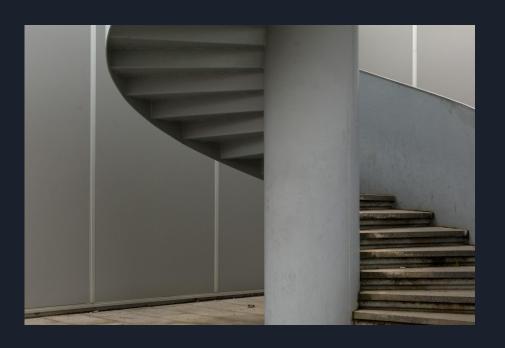
Next Steps

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- Incorporate Other Images

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  - Layers
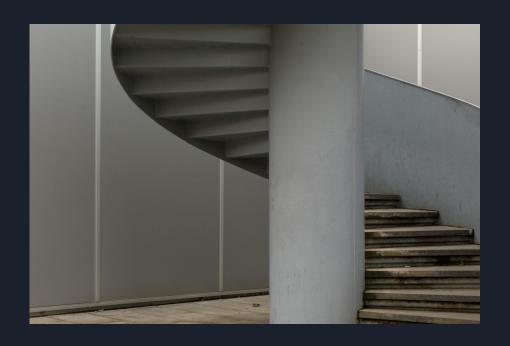 - Activation Alg's
  - Transformations
- Incorporate Other Images

Next Steps

- Split Fruit into Subsets
- Run different:
  - Layers
  - Activation Alg's
  - Transformations
- Incorporate Other Images
- Deploy Web App

Thank You!

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