

# Fruit Classification

Cristian M. Luna



• Search and Post Food



- Search and Post Food
- Upload Images



- Search and Post Food
- Upload Images

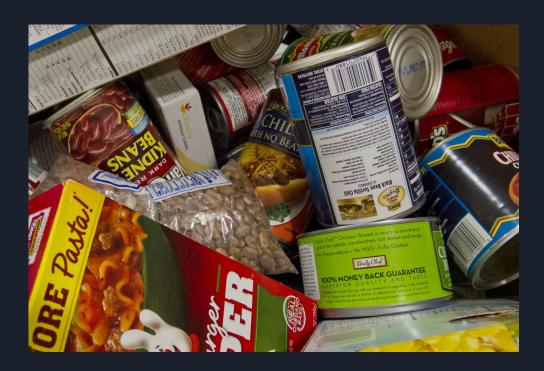
Problem



- Search and Post Food
- Upload Images

#### Problem

Manually Input Information



- Search and Post Food
- Upload Images

#### Problem |

- Manually Input Information
- User error



- Search and Post Food
- Upload Images

#### Problem |

- Manually Input Information
- User error
- Food waste



# Solution



# Image Classification System





• Reduce user error



- Reduce user error
- Tags



- Reduce user error
- Tags
  - Easier Search



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



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



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





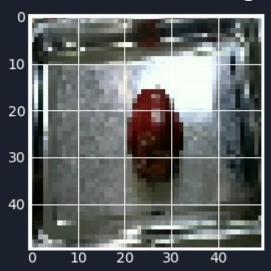
# Kaggle

# Kaggle

• 44k Fruit Images

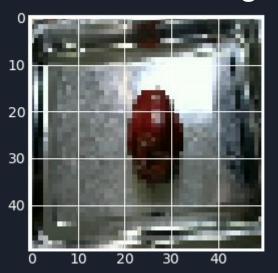
# Kaggle

44k Fruit Images



# Kaggle

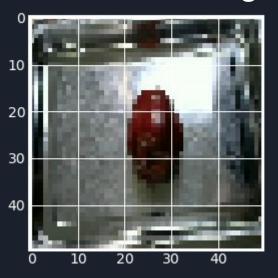
44k Fruit Images



- 15 Types of Fruit
  - o 2 5k Images

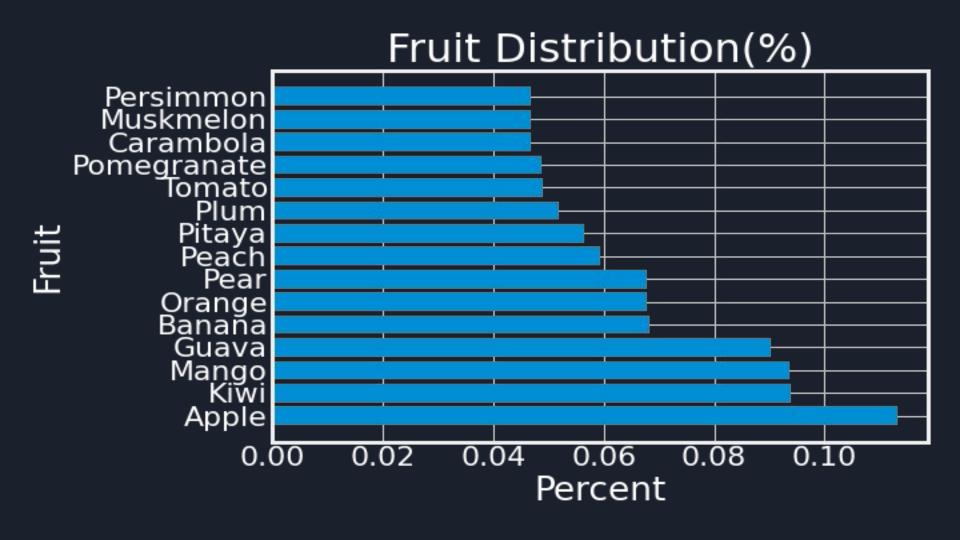
# Kaggle

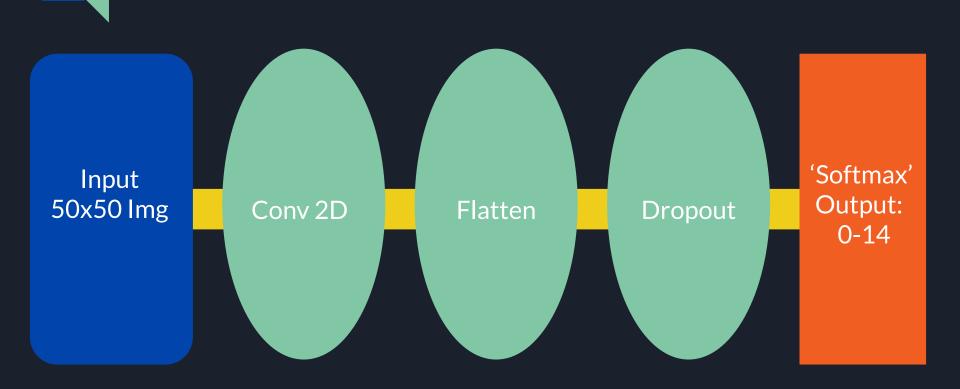
44k Fruit Images



- 15 Types of Fruit
  - o 2 5k Images

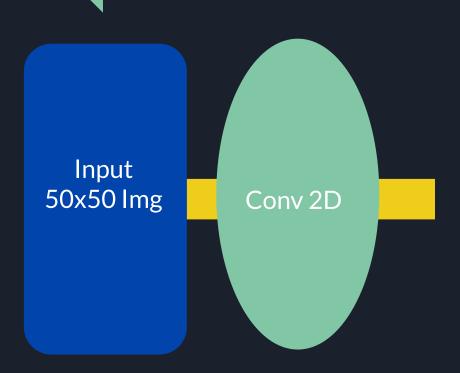
Lighting, Positioning, and Quantity



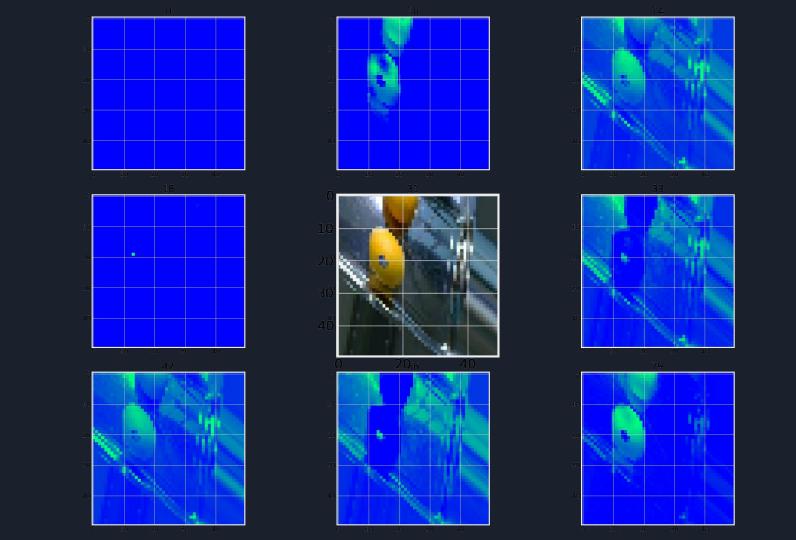


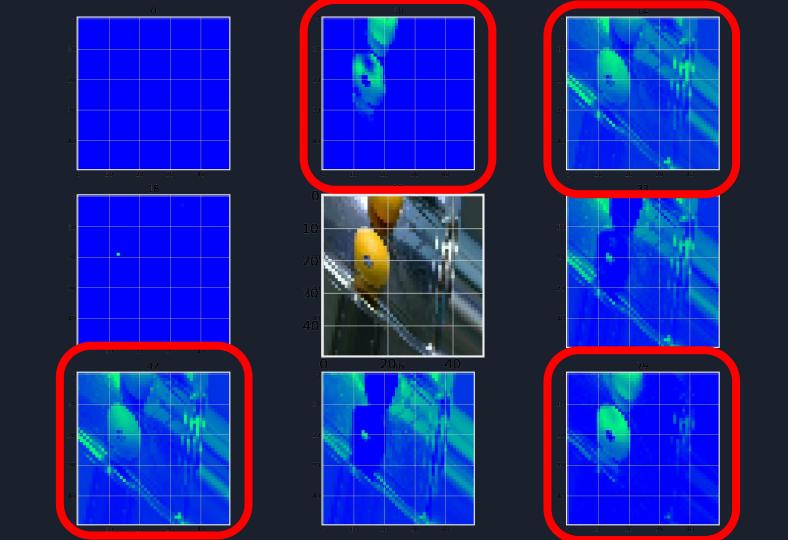
Input 50x50 Img

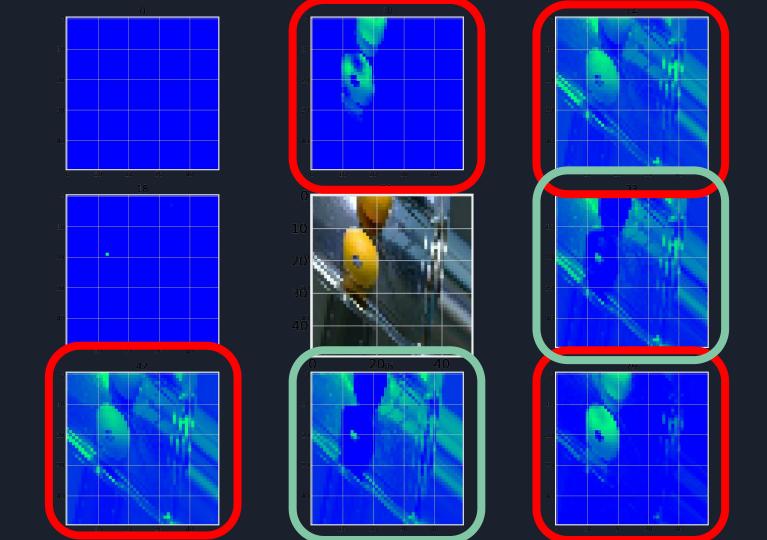




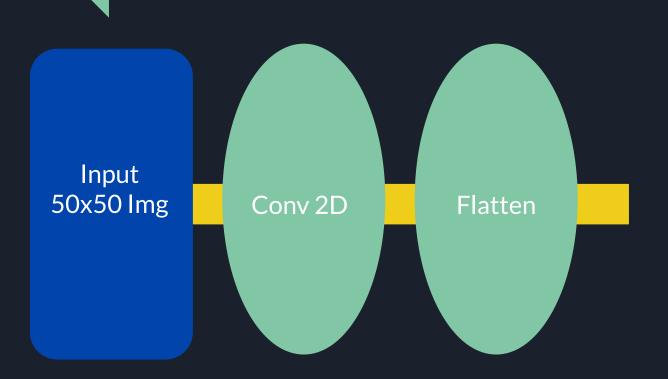


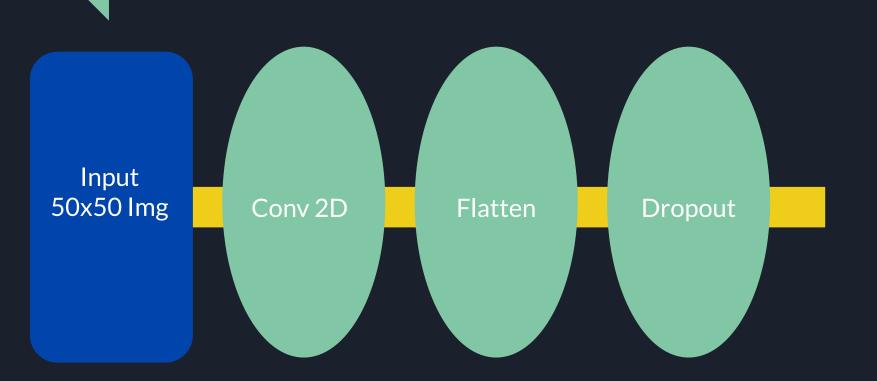


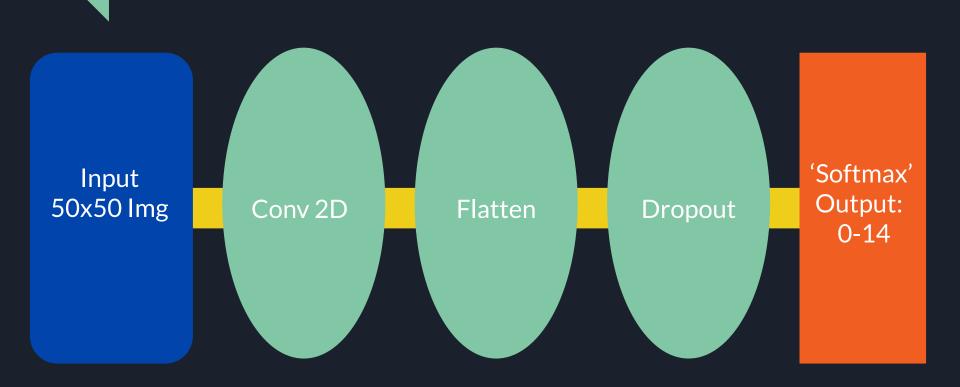


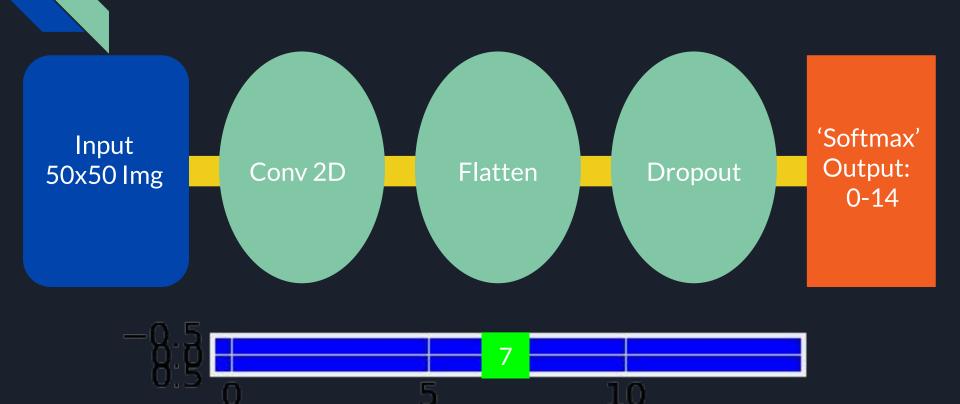












# Performance



Precision: 96.33%

Precision: 96.33%

Recall: 96.13%

Precision: 96.33%

F1: 96.17%

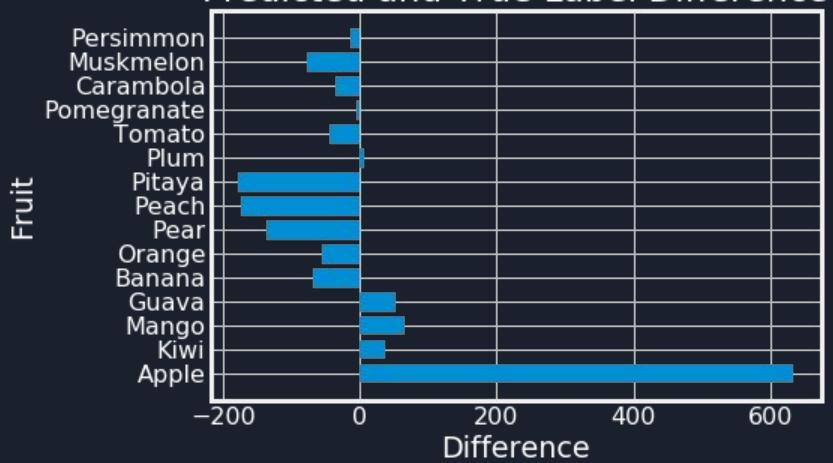
Recall: 96.13%

Precision: 96.33%

F1: 96.17%

Recall: 96.13%

#### Predicted and True Label Difference





Actual: Apple



Actual: Apple



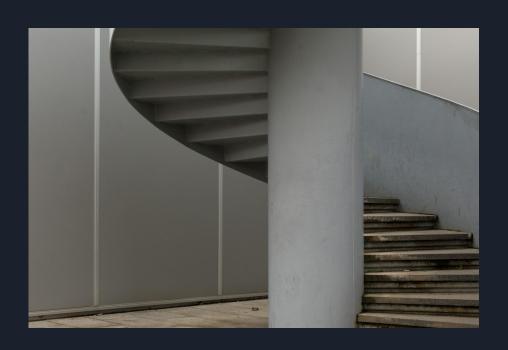
Predicted: Muskmelon

Actual: Apple

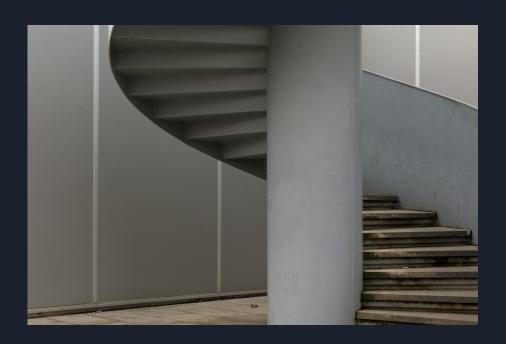


Predicted: Muskmelon

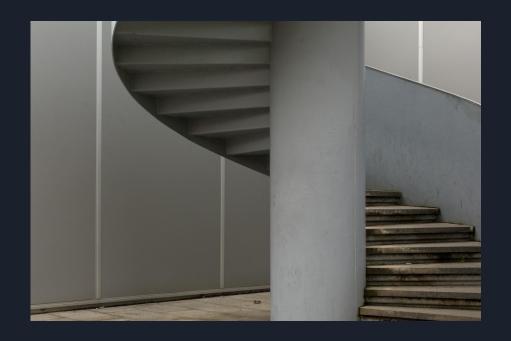




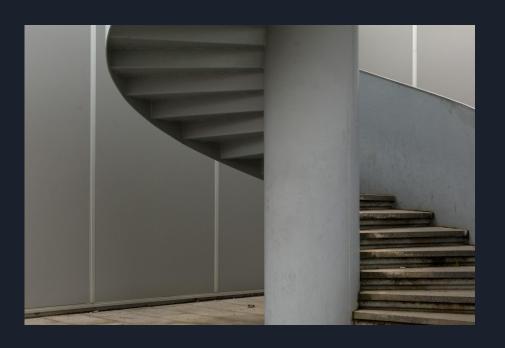
• Split Fruit into Subsets

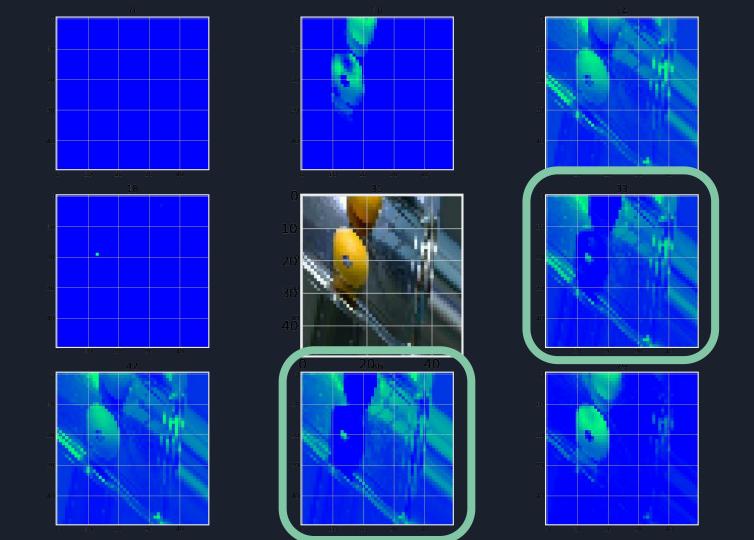


- Split Fruit into Subsets
- Run different:
  - Layers
  - Activation Alg's
  - Transformations

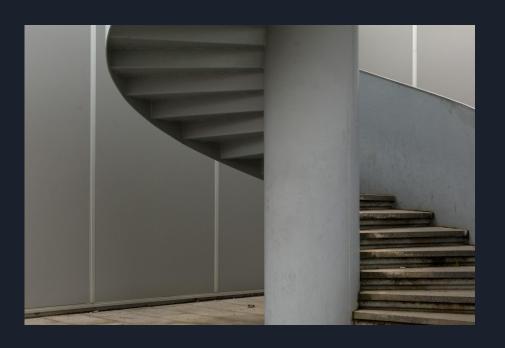


- Split Fruit into Subsets
- Run different:
  - Layers
  - Activation Alg's
  - Transformations
- Incorporate Other Images

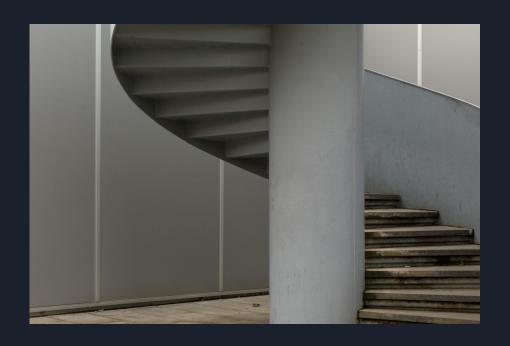




- Split Fruit into Subsets
- Run different:
  - Layers
  - Activation Alg's
  - Transformations
- Incorporate Other Images



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



# Thank You!

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