

# SheetCNN Architecture

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The SheetCNN model is a simple convolutional neural network designed from scratch to classify leaf images into several botanical categories.

The architecture is composed of three convolutional blocks:

- Conv2d
- ReLU
- MaxPool2d

## Block 1

1. Input: 3 channels (RGB image)
2. Conv2d(3, 16, kernel\_size=3, padding=1) a 16 feature maps
3. ReLU()
4. MaxPool2d(2) the output size:  $16 \times 150 \times 150$

## Block 2

1. Input: 16 channels
2. Conv2d(16, 32, kernel\_size=3, padding=1) a 32 feature maps
3. ReLU()
4. MaxPool2d(2) the output size:  $32 \times 75 \times 75$

## Block 3

1. Input: 32 channels
2. Conv2d(32, 64, kernel\_size=3, padding=1) a 64 feature maps
3. ReLU()
4. MaxPool2d(2) the output size:  $64 \times 37 \times 37$

## 2. Classifier

After flattening the feature maps ( $64 \times 37 \times 37$ ), the classifier processes them through two fully connected layers.

### Layers

- Dropout(0.4) to prevents overfitting
- Linear( $64 * 37 * 37$ , 256)
- ReLU()
- Dropout(0.4)

- `Linear(256, n_classes)` in this case, 7 classes

### 3. Forward Pass Summary

1. Input image
2. Flatten the resulting tensor
3. Pass through the fully connected classifier
4. Output: class logits

### 4. CNN Architecture



