DATA MINING

PINEAPPLE CLASSIFICATION

Group 5

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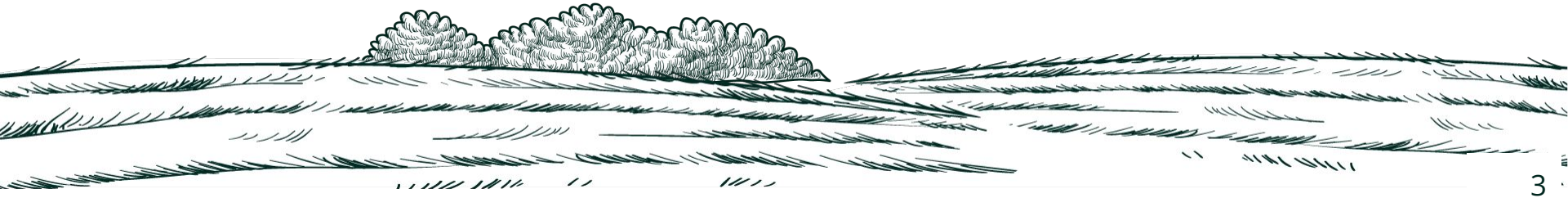
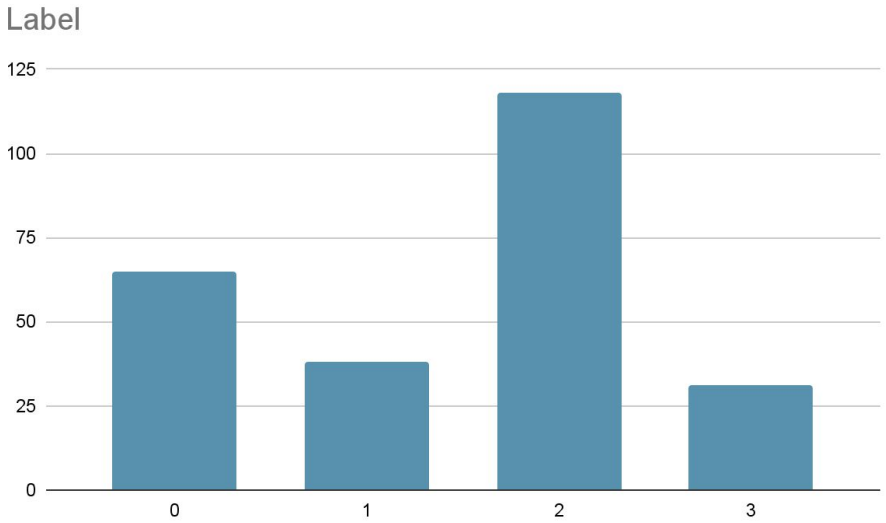
01 DATA



DATA SPLITTING

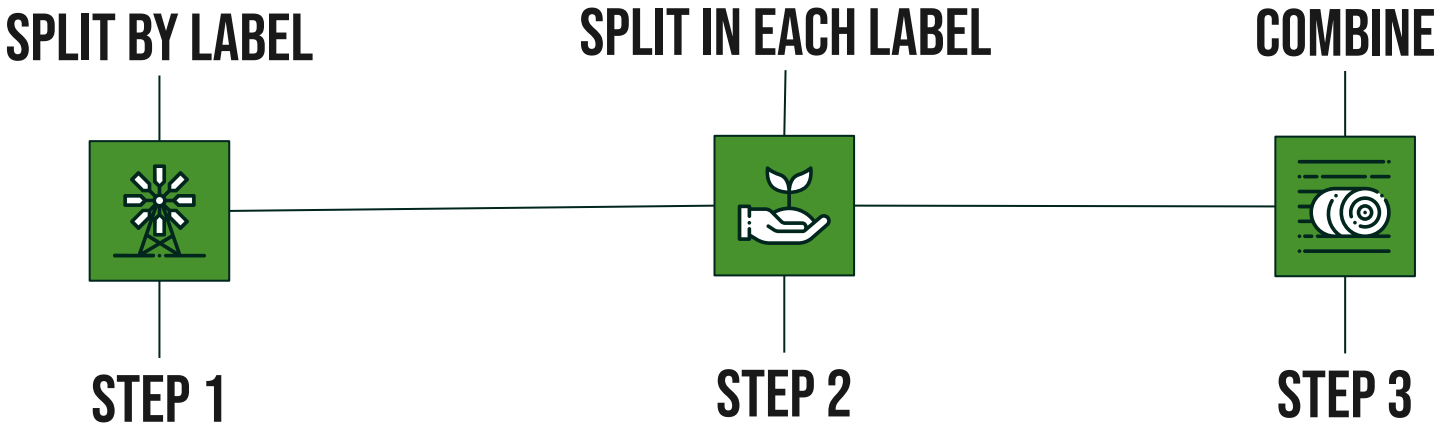
DATASET



Label	Counts
0	65
1	38
2	118
3	31

DATA SPLITTING

TRAIN : VALIDATION : TEST = 8 : 1 : 1



02 IMAGE

IMAGE - METHOD (IMBALANCED DATA DISTRIBUTION)

90.8%

IMAGE - PREPROCESSING & CLEANING

DATA CLEANING

- Leave out only the part of pineapple
- Adjust brightness and contrast
- Data augmentation
  - Rotate
  - Flip

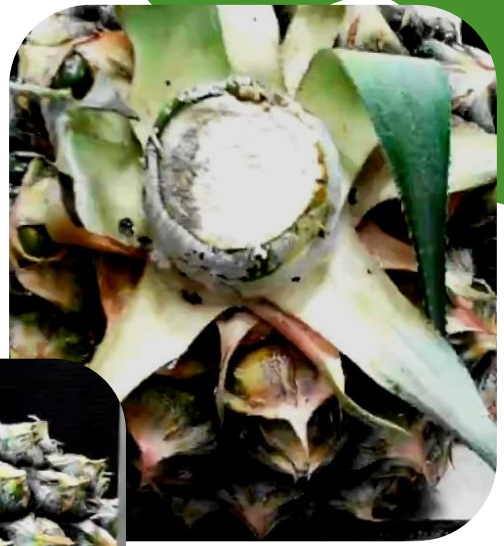


IMAGE - PREPROCESSING & CLEANING

DATA TRANSFORMATION

- Data augmentation
  - random crop
- Normalization

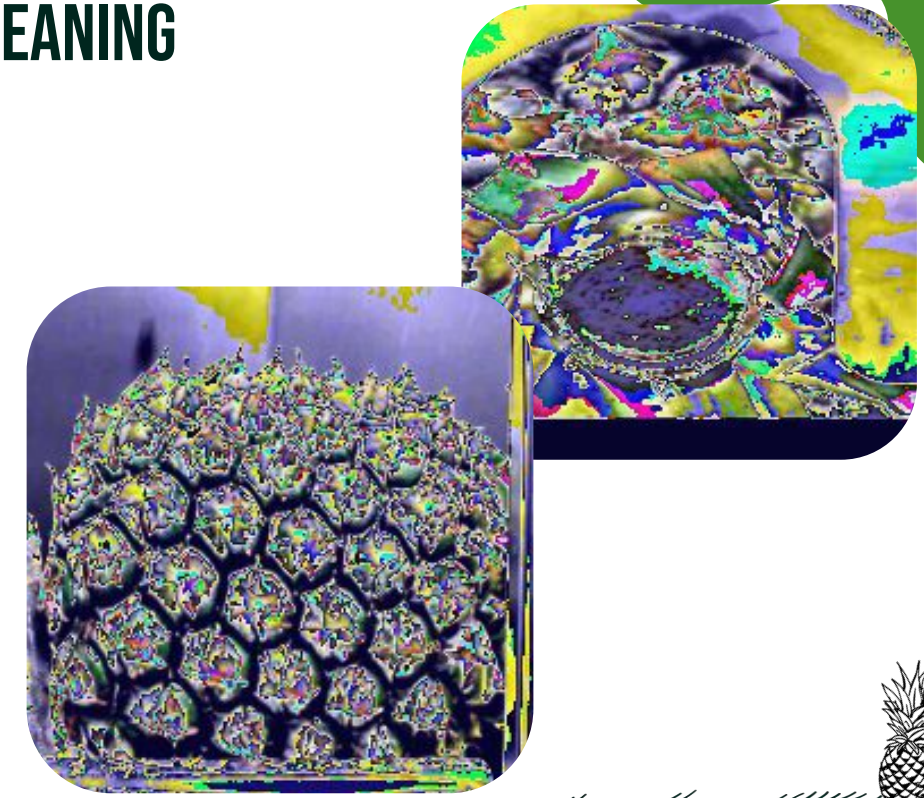


IMAGE - METHOD

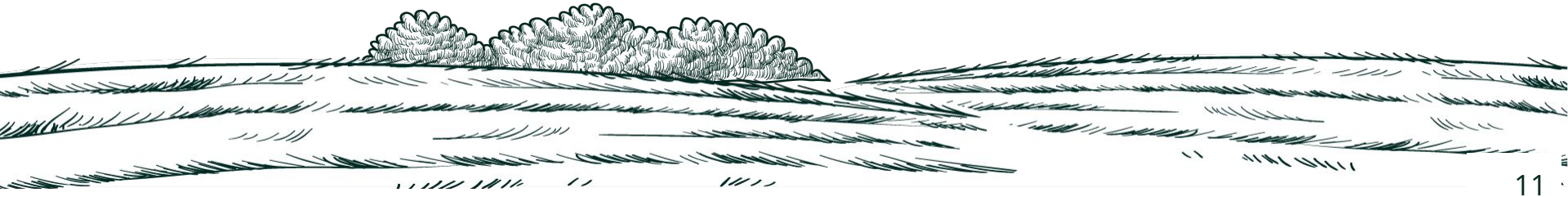
MODELS (PRE-TRAINED)

- VGG16 (Best)
- ResNet18
- ResNet50

BEST HYPERPARAMETERS

- Epochs: 50
- Batch size: 32
- Learning rate: 1e-5

03 AUDIO



AUDIO - PREPROCESSING

RETRIEVE GOOD DATA ONLY

- cam-1
- X cam-2 cam-3

MAP ID + LABEL

- 8 files for each ID

AUDIO - DATA AUGMENTATION

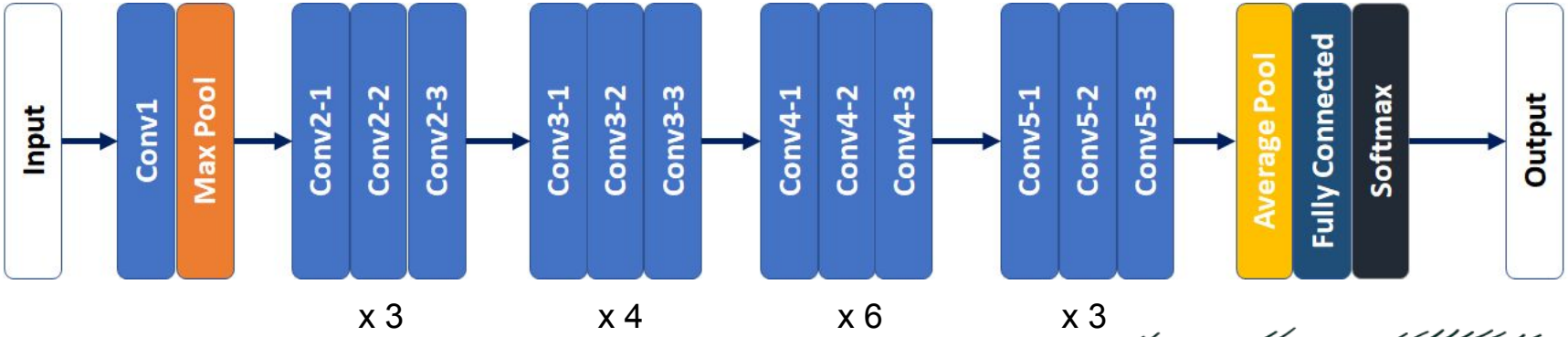
- Time Shift
- Frequency mask
- Time mask

DOESN'T WORK!!

AUDIO - METHOD

RESNET-50

- Deeper model
- 49 convolutional layer
- 1 fully connected layer



AUDIO - METHOD

TUNING

- Cross-Entropy
- Training loss & validation loss
- Learning rate = 0.001
- 10 epochs

ERROR & TRY

AUDIO - METHOD

80.5%

AUDIO - MODELS

MODEL 1

- Original data
- 4 labels

MODEL 2

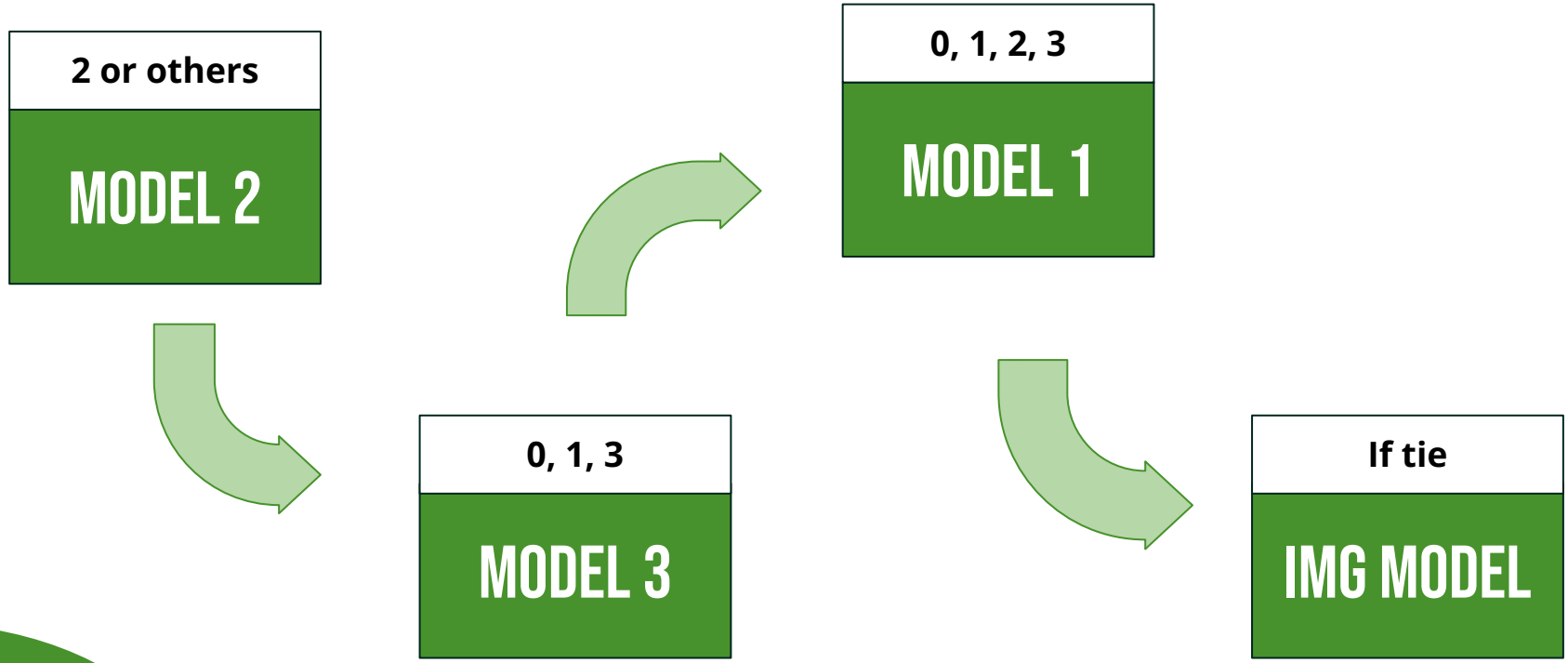
- Original data
- 2 or not 2
- 2 labels

MODEL 3

- Remove 2
- 3 labels

04 COMBINATION

COMBINATION - IMAGE & AUDIO



COMBINATION - IMAGE & AUDIO

≈ 60 %

COMBINATION - IMAGE & AUDIO{失敗}

- 方法 : 直接將特徵結合
- 問題 :模型的特徵維度不同，聲音和圖片資料量也不盡相同，在融合上會變得資料混亂，效果也變得很差。

REFERENCE

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THANKS!

ANY QUESTIONS?