



أكاديمية سدايا  
SDAIA Academy

# Optical Music Recognition

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# Goal

**Develop a sheet music reader to classify each music note then produce the music**



# Data Collection



Music Sheets

5,000 Images



Predefined  
Model

To label the notes

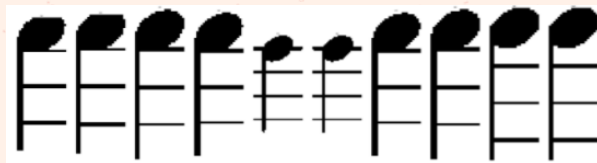
The dataset contains **44,980 notes** and their **labels & ID**

# Labeling Process

Original Sheet



First 10 Notes



['c4', 'c4', 'g4', 'g4', 'a4', 'a4', 'g4', 'g4', 'f#4', 'f#4']



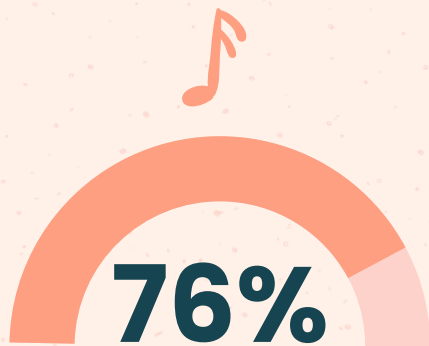
# Model:

# Convolutional Neural Network

with 5 convolution layers

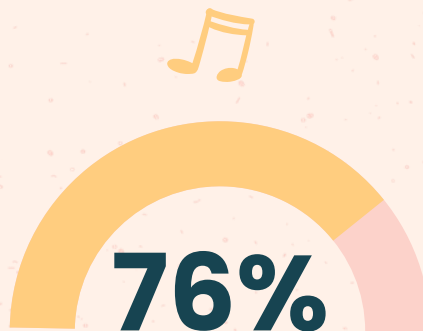
<b>Activation Functions</b>	Softmax & Relu
<b>Loss Function</b>	Categorical Cross Entropy
<b>Optimizer</b>	Adam
<b>Metric</b>	Accuracy

# Results



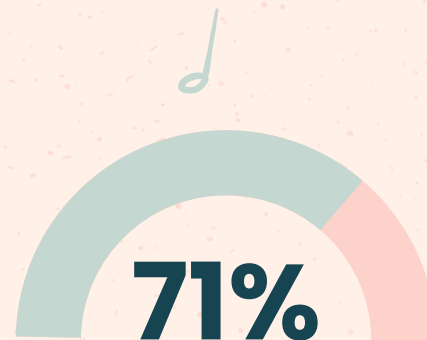
**Training**

3k Music Sheets



**Validation**

1k Music Sheets



**Testing**

1k Music Sheets



**Can we produce music  
with Python?**





# How to produce music with Python?

- `scipy.io.wavfile`
  - Method: write
    - Writes a NumPy array as a Waveform (WAV) Audio File Format





# Data Collection II



## Note Frequencies

Scraped from Wikipedia

The dataset contains **15 notes** and their **frequency**

# Output Example



The background is a solid coral color with a fine, white, speckled texture. Scattered around the central text are several abstract, hand-drawn style shapes in various colors: a yellow and white shape in the top left, a light pink shape in the top left, a dark red shape in the top right, a cluster of teal dots in the middle right, a yellow shape with a white dot in the bottom right, a red circle in the bottom center, a teal shape in the bottom center, and several orange vertical bars in the bottom left.

**THANK  
YOU**