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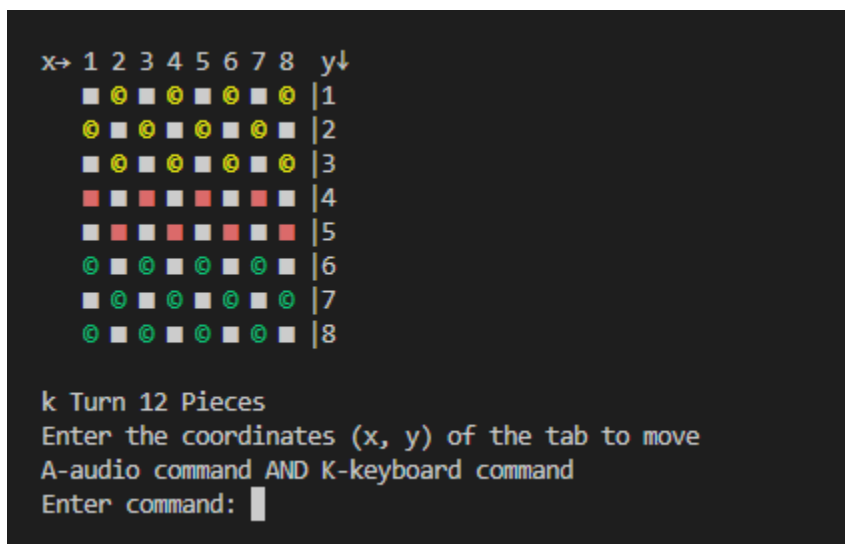
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## Voice Command Steering Draughts

This is a simple game that allows you to steer using voice commands. The game utilizes deep learning techniques with TensorFlow to interpret voice commands for controlling the moves of draughts. The movement of the pawn is determined by entering the coordinates of a pawn, which we would like to move and the coordinates of a square to which we would like to move it.

The game presents as follows:



We can enter the coordinates in two ways:

- By entering input (Type "K"):

```
x→ 1 2 3 4 5 6 7 8 y↓
  ■ ● ■ ● ■ ● ■ ● |1
  ● ■ ● ■ ● ■ ● ■ |2
  ■ ● ■ ● ■ ● ■ ● |3
  ■ ■ ■ ■ ■ ■ ■ ■ |4
  ■ ■ ■ ■ ■ ■ ■ ■ |5
  ● ■ ● ■ ● ■ ● ■ |6
  ■ ● ■ ● ■ ● ■ ● |7
  ● ■ ● ■ ● ■ ● ■ |8

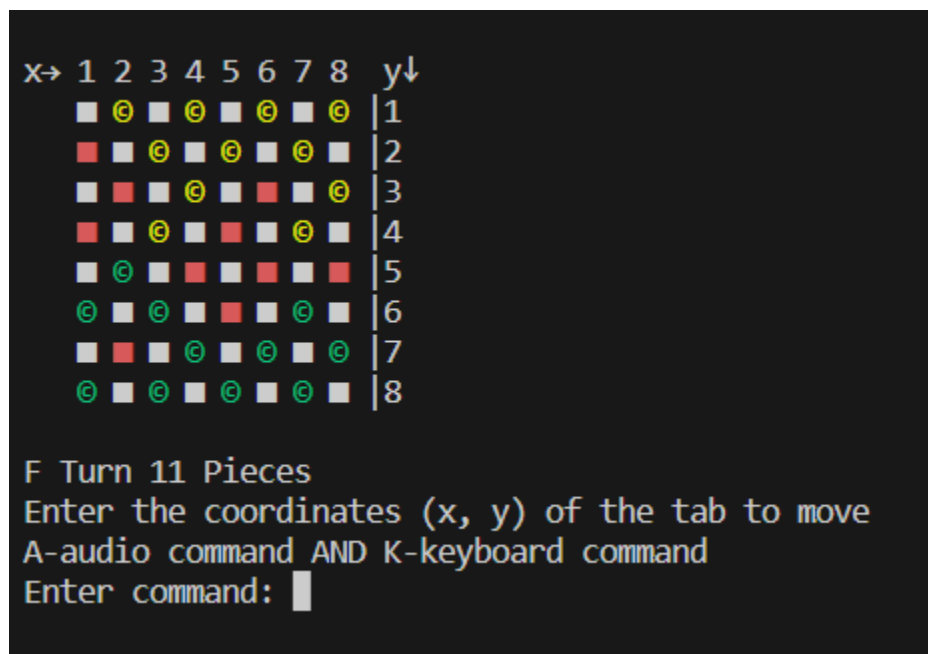
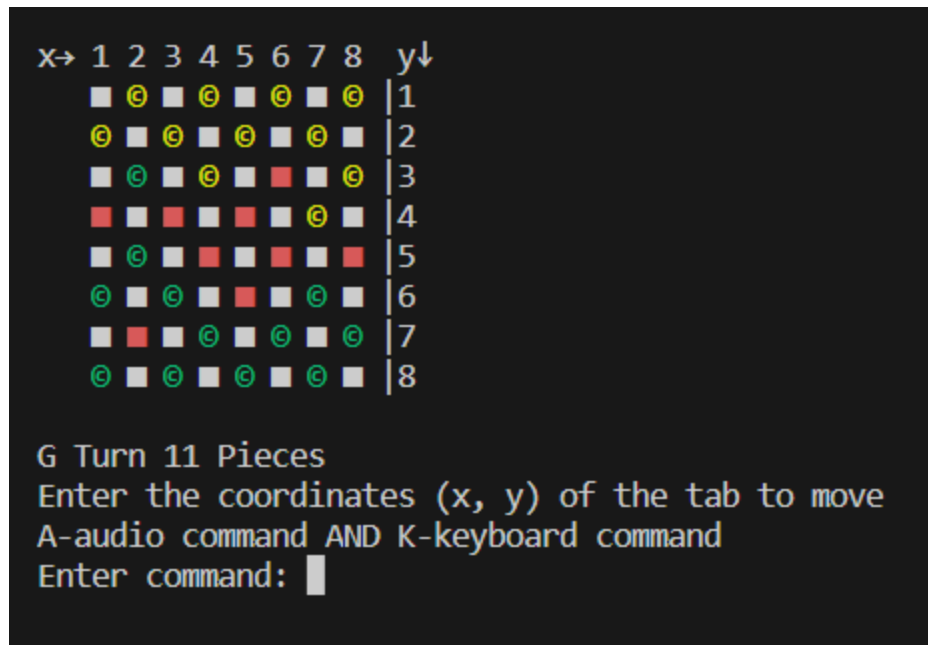
Kuba Turn 12 Pieces
Enter the coordinates (x, y) of the tab to move
A-audio command AND K-keyboard command
Enter command: K
Enter coordinate: 
```

- By calling the numbers through the microphone (Type "A"):

```
A-audio command AND K-keyboard command
Enter command: A
start recording...
recording stopped
6
```

After typing "A" command the message pops up that the recording has started, and then we need to say the number which we want to enter. When it stops recording, the program analyses the audio and compares it to the model which was trained earlier.

## Example of capturing a pawn:

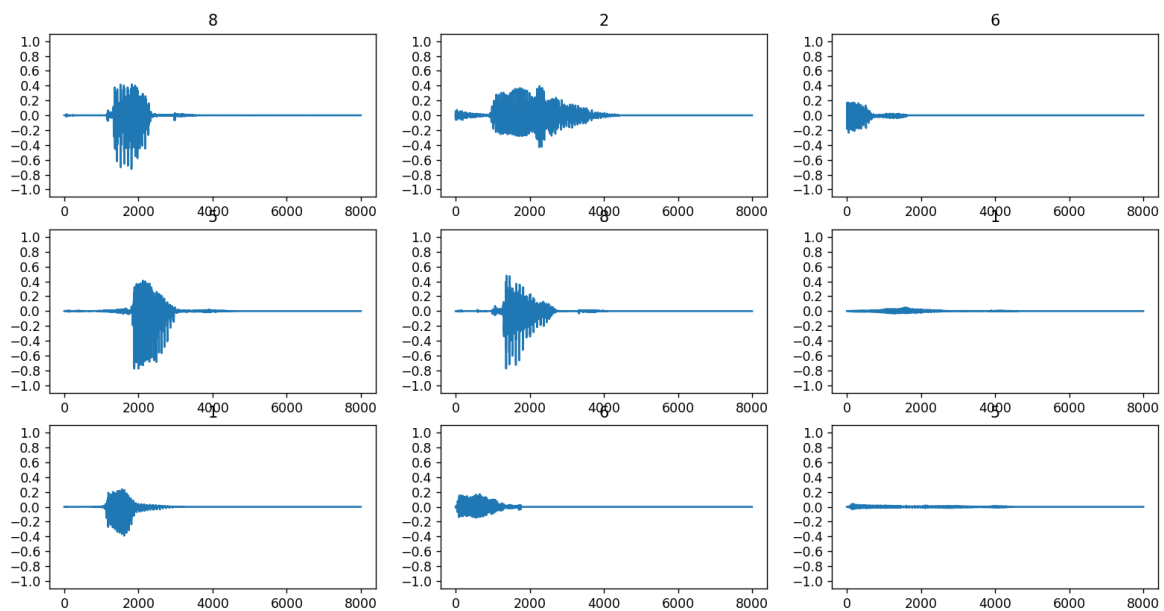


As we can see the green (player F) pawn on coordinates (2,3) has been captured by the yellow (player G) one from (1,2).

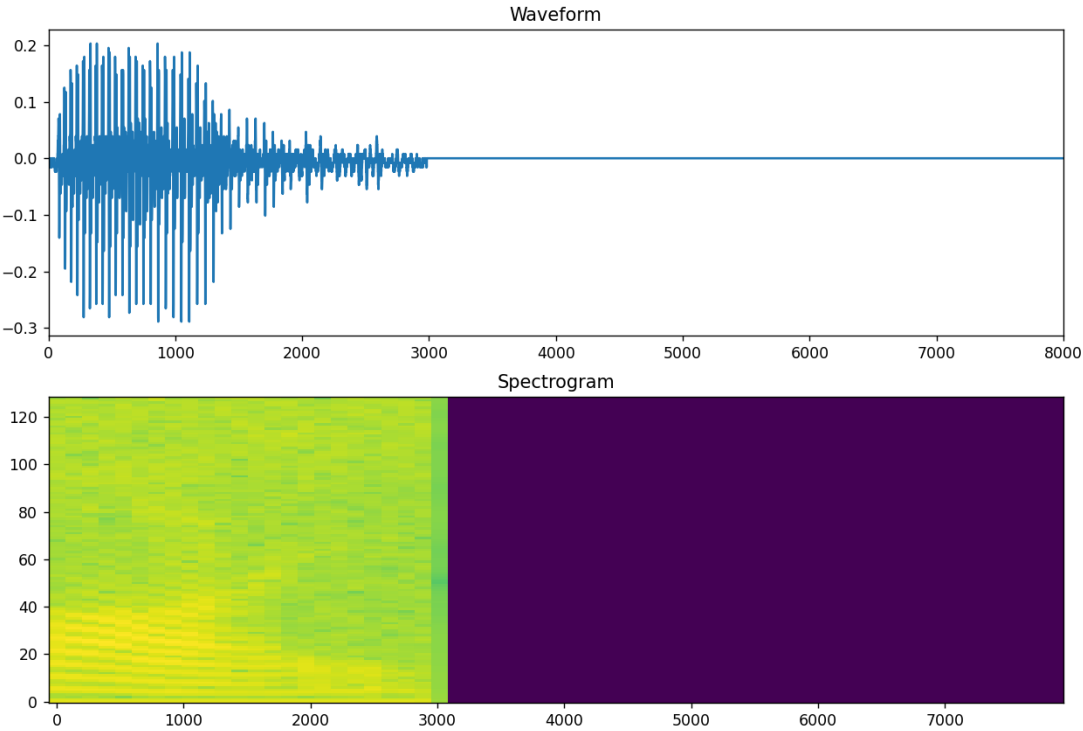
## Speech recognition model:

To train our model we've got the dataset from <https://www.kaggle.com/datasets/joserzapata/free-spoken-digit-dataset-fsdd> which contains 3000 recordings with spoken numbers from 0 to 9.

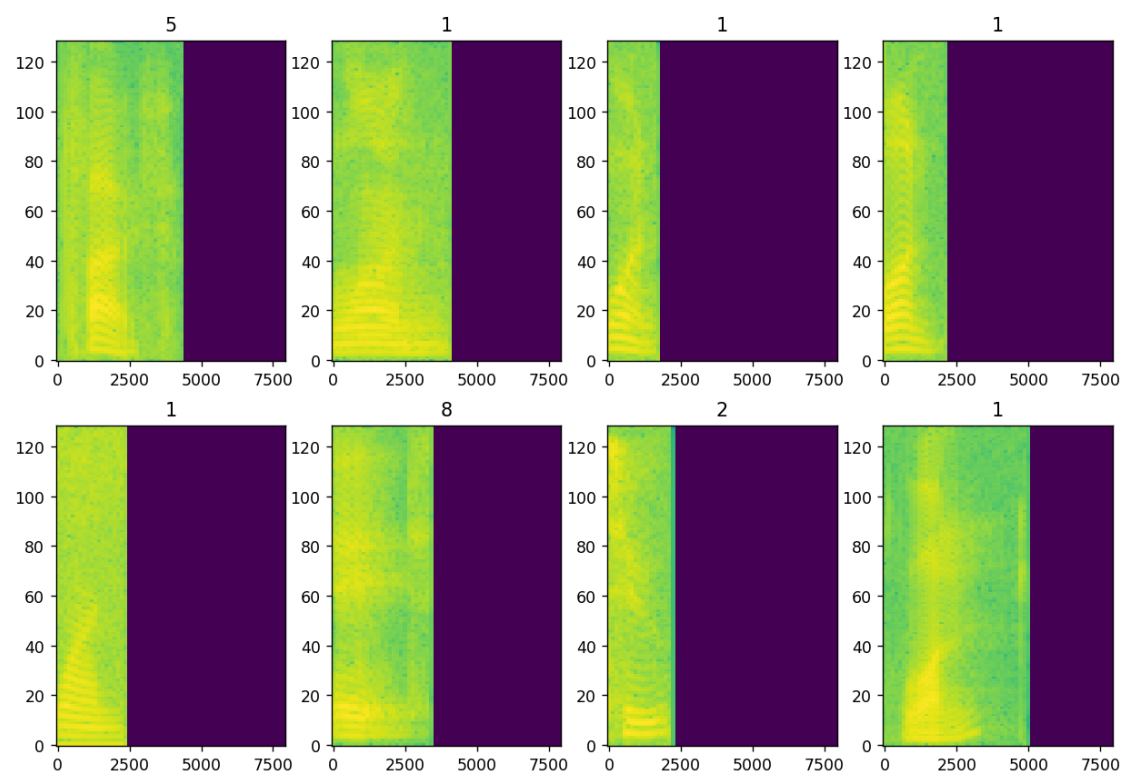
## Waveforms of exemplary files from the dataset:



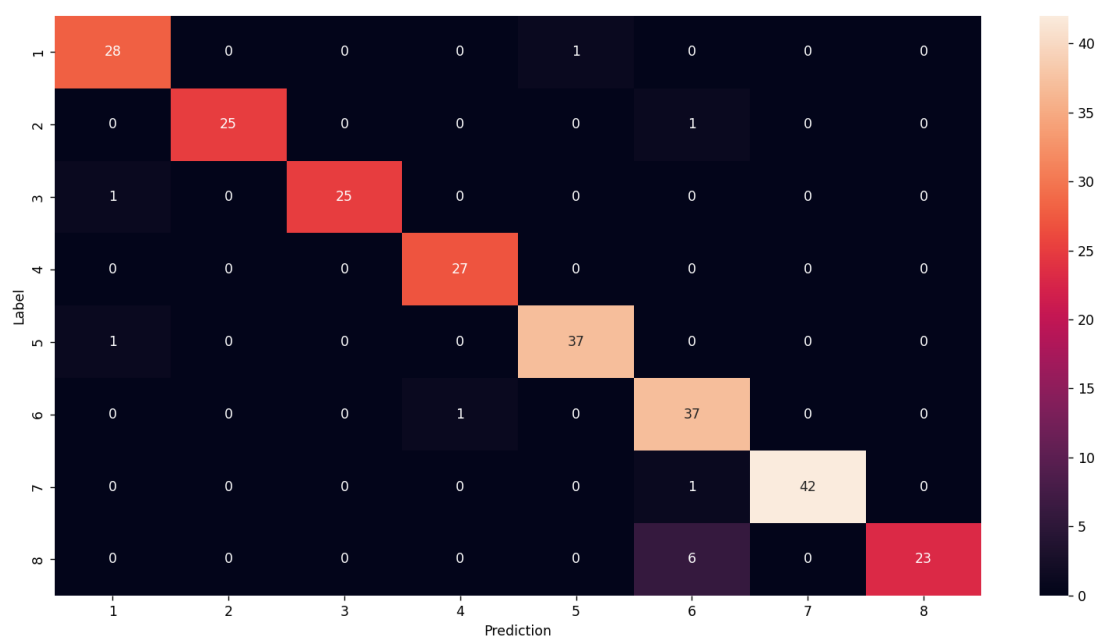
# Spectrogram



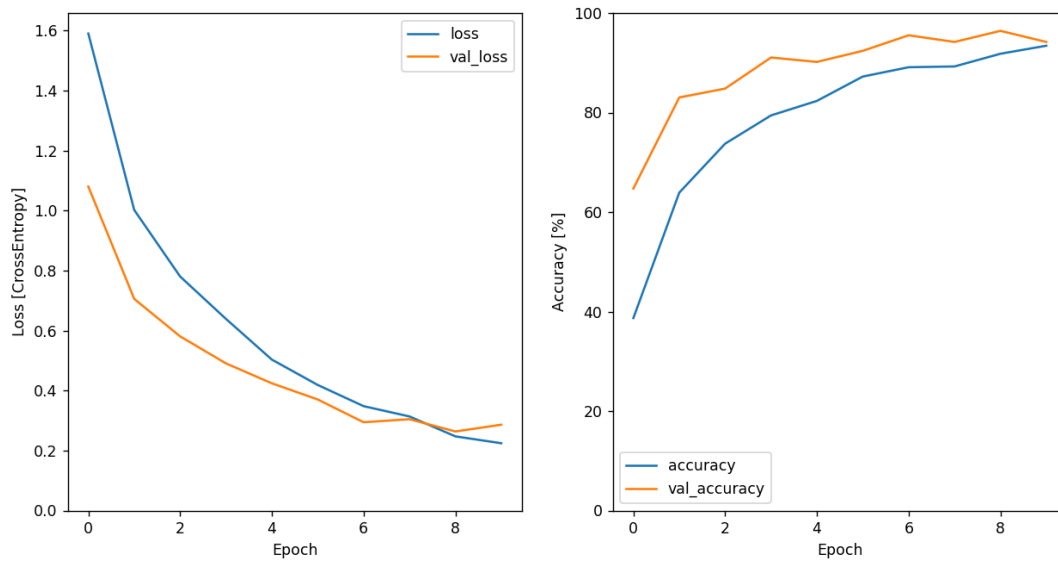
# Spectrogram grid of exemplary recordings:



# Confusion matrix



## Representation of loss and accuracy to epoch



## Results of testing our model on testing samples:

