'''

MOIRA

Mediating Output Interpreter for Real-time Analysis

version 1.0

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An algorithm that shows the chord name for every combination of neural network outputs.

'''

UPPER\_BOUNDS = [0.08, 0.16, 0.24, 0.32, 0.40, 0.48, 0.56, 0.64, 0.72, 0.80, 0.88, 0.96]

NOTES = ['C', 'C#', 'D', 'D#', 'E', 'F', 'F#', 'G', 'G#', 'A', 'A#', 'B']

**def** determineNote(NEURON\_0\_VALUE):

**if** NEURON\_0\_VALUE < 0.08:

**return** None

**else**:

**for** i **in** range(1, 12):

**if** UPPER\_BOUNDS[i - 1] <= NEURON\_0\_VALUE < UPPER\_BOUNDS[i]:

**return** NOTES[i - 1]

**elif** NEURON\_0\_VALUE >= 0.96:

**return** "B"

**def** determineChordName(outputs):

rn = float(outputs[0])

ROOT\_NOTE = determineNote(rn)

chord\_modifiers = ""

**for** output\_neuron **in** range(1, len(outputs)):

**if** outputs[output\_neuron] == 1: # The number contained is 1

**if** output\_neuron == 1: # The index is some value

chord\_modifiers += "maj"

**elif** output\_neuron == 2:

chord\_modifiers += "min"

**elif** output\_neuron == 7 **and** outputs[2] == 1 **and** outputs[9] == 1:

chord\_modifiers += "o"

**elif** output\_neuron == 3:

chord\_modifiers += "aug"

**elif** output\_neuron == 4:

chord\_modifiers += "dim"

**else**:

**pass**

**for** output\_neuron **in** range(1, len(outputs)):

**if** outputs[output\_neuron] == 1:

**if** output\_neuron == 8:

chord\_modifiers += "6"

**elif** output\_neuron == 9:

chord\_modifiers += "7"

**elif** output\_neuron == 10:

chord\_modifiers += "9"

**elif** output\_neuron == 11:

chord\_modifiers += "11"

**elif** output\_neuron == 12:

chord\_modifiers += "maj7"

**else**:

**pass**

**for** output\_neuron **in** range(1, len(outputs)):

**if** outputs[output\_neuron] == 1:

**if** output\_neuron == 13:

chord\_modifiers += "(9)"

**elif** output\_neuron == 5:

chord\_modifiers += "sus2"

**elif** output\_neuron == 6:

chord\_modifiers += "sus4"

**elif** output\_neuron == 7 **and** outputs[2] == 1 **and** outputs[9] == 1:

chord\_modifiers = "o7"

**else**:

**pass**

**return** ROOT\_NOTE + chord\_modifiers

# Tester

**def** test():

the\_road = input("Enter the chord output: ").strip().split(' ')

#print(cs)

c = []

**for** k **in** the\_road:

**if** len(k) > 1:

c.append(float(k))

**else**:

c.append(int(k))

#print(c)

# n ma mi a d s2 s4 b5 6 7 9 11 +M7+9

#c = [0.88, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0]

**print**(determineChordName(c))

# TESTER BLOCK

# if \_\_name\_\_ == "\_\_main\_\_":

# test()