Title - Music Composition using Recurrent Neural Network

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Database (Link / Snapshot of data)

http://www.esac-data.org

Link -

This is the webpage from where different styles of of Music and its Musical notes is available in the .krn format

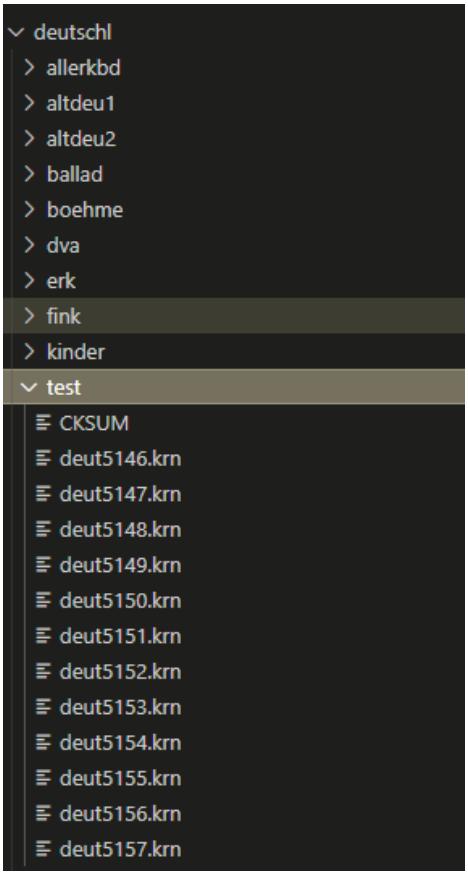
https://kern.humdrum.org/cgi-bin/browse?l=essen/europa

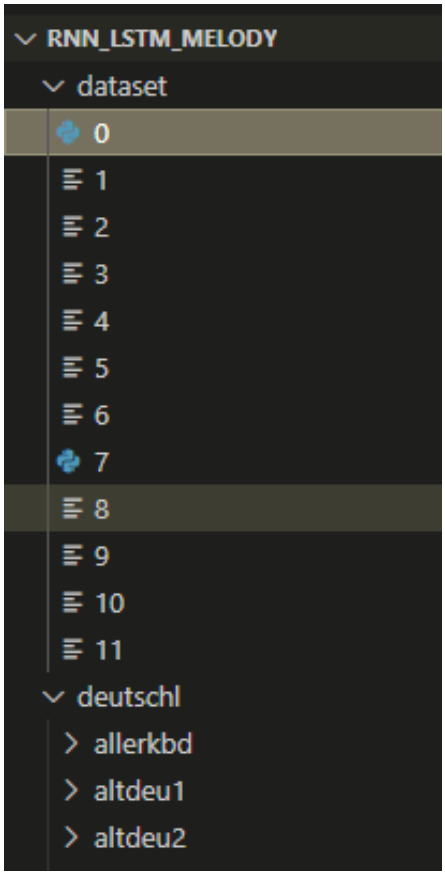
DatasetLink -

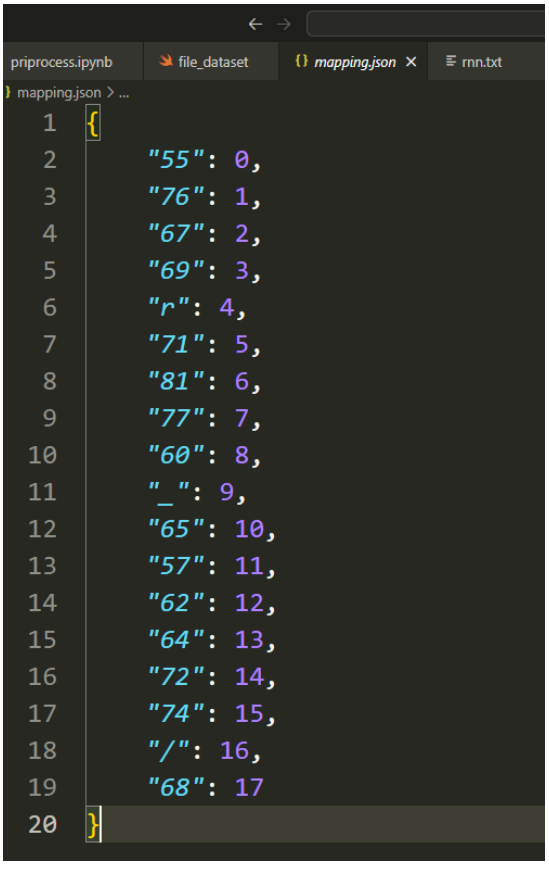
From that I have used the humdrum dataset Dataset is European styled with deutschl Folksongs from Germany.

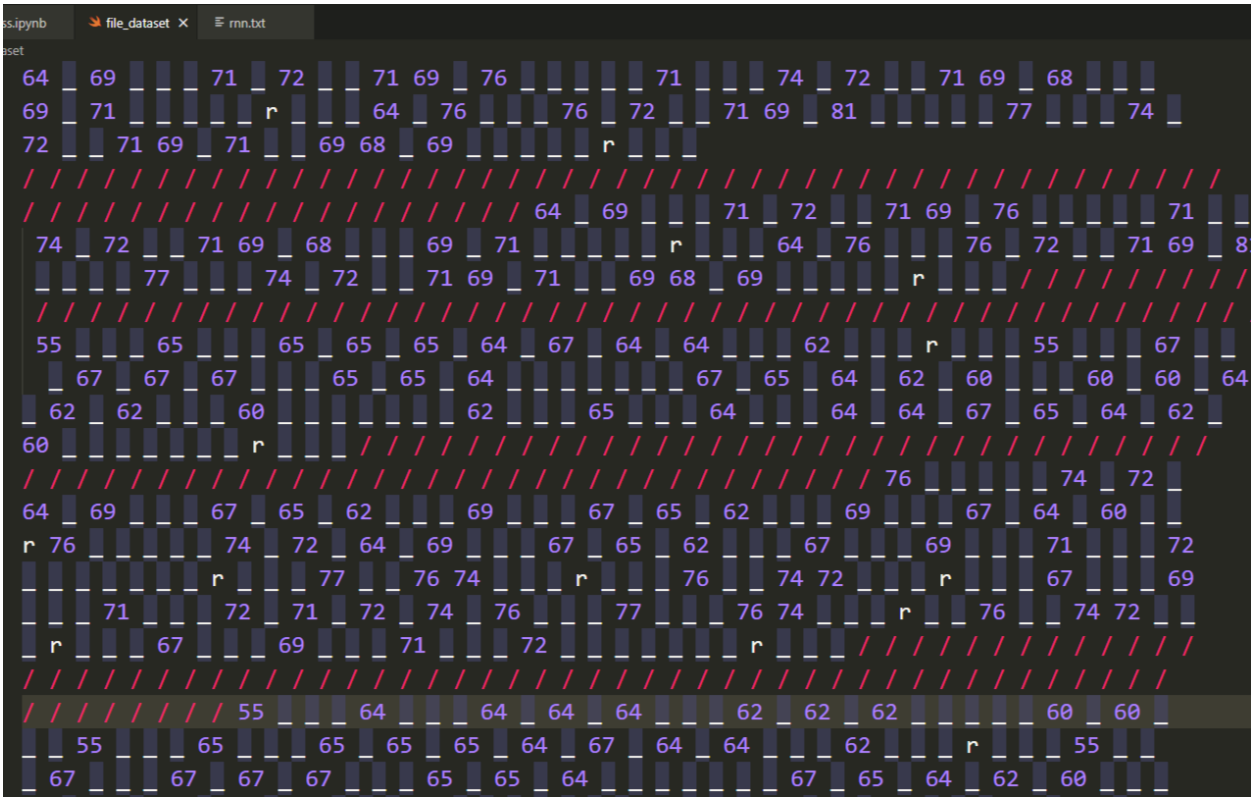
Preprocessing Steps :

1. **RAW DATA**
2. **LOADING THE DATA AND CHECKING IF IN ACCEPTABLE DURATION**
3. **TRANSPOSING AND CONVERTING INTO VALUES SYMBOLS AND RESTS**










```
def generate_training_sequences(sequence_length):

    # load songs to convert them to int

    songs  = load(SINGLE_FILE_DATASET)
    int_songs = convert_songs_to_int(songs)

    # generate the training sequences
    # how many sequences can we generate here , or should we

    # 100 symbols , seqlen = 64 , how many = 100 - 64 = 36

    inputs = []
    targets = []

    num_sequences = len(int_songs) - sequence_length

    for i in range(num_sequences):
       # at each step takes a slice of the int songs and when we increase the counter
       # we move right just one step
       inputs.append(int_songs[i:i+sequence_length])
       targets.append(int_songs[i+sequence_length])

   # one hot encode the sequences

    vocabulary_size = len(set(int_songs))
    inputs = keras.utils.to_categorical(inputs , num_classes = vocabulary_size)

    targets = np.array(targets)


    return inputs , targets
```

Part of Code

Literature survey on at least 05 papers with gap analysis :

For simplicity , Midi is nothing but pulses or signals which trigger piano notes on their own and play the melody in the software.

All the papers I have read have used MIDI (audio file format) to train the models using different techniques and generate music .

In some cases they have also trained models on whole songs and generated music based on the features extracted from the songs. In this paper which i have submitted they have used ABC notations and midi files to train data.

In my case I am using the .krn format -> convert it into sequential data -> Generate MIDI -> Test MIDI on the DAW

Paper 1 - https://arxiv.org/ftp/arxiv/papers/1908/1908.01080.pdf

Paper 2 - https://hal.sorbonne-universite.fr/hal-01840937/document

Paper 3 - https://www.researchgate.net/publication/351708912_Music_Generation_using_Deep_Learning

Paper 4 - https://www.researchgate.net/publication/351708912_Music_Generation_using_Deep_Learning

Paper 5 - https://iarjset.com/wp-content/uploads/2019/06/IARJSET.2019.6508.pdf