

Deep Learning Topic Proposal

Team Members:

1. Aman Jaglan (G45030269)
2. Aneri Patel (G40408020)
3. Smit Pancholi (G31443926)
4. Tushar Sharma (G24951989)

Music generation using deep neural networks.

Introduction:

In recent years, deep neural networks (DNNs) have revolutionized various fields, including music generation. With the advancements in machine learning algorithms and the availability of large-scale datasets, DNNs have demonstrated remarkable capabilities in generating music that resembles compositions created by human composers.

Objective:

In this project, the aim is to explore the potential of select neural networks- **RNN/LSTMs, Auto encoders and Wavenet** to generate audio. Music generation using deep neural networks involves training algorithms to learn the underlying patterns and structures of music from a dataset of existing compositions. These algorithms then generate new pieces of music that mimic the style, genre, and characteristics of the training data. The processing would involve representing the audio samples as time series. The network would be given the audio samples and based on the patterns that it captured, it would extrapolate the melody. A web application will be developed using Streamlit to showcase the generated melodies in an interactive manner.

Dataset:

The dataset contains 20k+ folk songs melodies of variable duration. Each second of an audio would contain a specific number of samples (16,000 or 48,000 Hz). This would call in for the use of modest computing resources like Cloud for training the network.

Link: [ESAC Software \(esac-data.org\)](https://esac-data.org)