



# Music Classification & Creation:

## From Zero to Hero

Group 6



# Overview

Humans have mastered the skill to create unique visual and audio experiences through composing of both art and music. For the truly successful artists both in the art world and the music world, each one has his or her own unique 'style'. The current technological advancements have transformed the way we produce music, listen, and work with music. With the advent of deep learning, it has now become possible to generate music without the need for working with instruments artists may not have had access to or the skills to use previously. This offers artists more creative freedom and ability to explore different domains of music.

In this project we will attempt to create new music using neural networks and under the keras platform.

# Goals

1. Use deep learning techniques to learn the compositional styles of selected genre and classify the genre.
2. Use deep learning techniques to learn how to generate music using the genre that we learnt above.

# Dataset

We use GTZAN music genre dataset. This dataset has 1,000 different songs from 10 different genres, with 100 songs per genre and each song is about 30 seconds long.

Source:

[http://opihi.cs.uvic.ca/sound/genres.tar.g](http://opihi.cs.uvic.ca/sound/genres.tar.gz)

z

```
[ ] genres/  
    genres/blues/  
    genres/blues/blues.00000.au  
    genres/blues/blues.00001.au  
    genres/blues/blues.00002.au  
    genres/blues/blues.00003.au  
    genres/blues/blues.00004.au  
    genres/blues/blues.00005.au  
    genres/blues/blues.00006.au  
    genres/blues/blues.00007.au  
    genres/blues/blues.00008.au  
    genres/blues/blues.00009.au  
    genres/blues/blues.00010.au  
    genres/blues/blues.00011.au  
    genres/blues/blues.00012.au  
    genres/blues/blues.00013.au  
    genres/blues/blues.00014.au  
    genres/blues/blues.00015.au  
    genres/blues/blues.00016.au  
    genres/blues/blues.00017.au  
    genres/blues/blues.00018.au  
    genres/blues/blues.00019.au  
    genres/blues/blues.00020.au
```

# Process Outline

1. Data Preprocessing
2. Exploratory Data Analysis and data cleaning.
3. Using transfer learning and fine tuning to build the best model for classification.
4. Build model to randomly create piece of music and combine it with the previous model.

# Timetable

Timeframe	Delivery
Day 1-2	Data Preprocessing and Exploratory Data Analysis
Day 3-9	Models Building, Training and Tuning
Day 10-11	Music creation using the model
Day 12-13	System integration and documentation

# Deployment Details

- 1) Language: Python, Java
- 2) Music21
- 3) Keras
- 4) Cloud Tools/Platforms: AWS (Amazon WEb Services) EC2
- 5) Other Considerations: Flask

# Reference and Sources

[https://medium.com/@navdeepsingh\\_2336/identifying-the-genre-of-a-song-with-neural-networks-851db89c42f0](https://medium.com/@navdeepsingh_2336/identifying-the-genre-of-a-song-with-neural-networks-851db89c42f0)

[http://blog.sina.com.cn/s/blog\\_40793e970102w3m2.html](http://blog.sina.com.cn/s/blog_40793e970102w3m2.html)

<https://www.youtube.com/watch?v=pg9apmwf7og>

<https://cs224d.stanford.edu/reports/allenh.pdf>