

# School of Computing

## Year 4 Project Proposal Form

### SECTION A

Project Title Music Analysis Tool

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### General area covered by the project

My aim to build a music analysis tool that will take in a song, most likely in wav format, and return details on the song. It will tell me things like the mode, bpm, rhythm and form. It will try to find the notes played by the lead instrument or specified instrument and return them as a midi file or sheet music. It will use classification machine learning algorithms to try and identify which instruments are in the song. I will start by choosing the songs to try limit my scope. I will start with songs with just one instrument eg piano pieces, and then try work on songs with a lead and a bass, and then songs with percussion as well.

### Outline of the proposed project

#### Background - where the ideas came from

I have always had an interest in music and I had been playing around with music production software over the summer. A good way to learn to learn this software is to try to recreate songs that you like, and I thought that a tool like this would help with that process.

#### Achievements - what functions it provides, who the users will be

It will provide information on a song. It will be helpful for people who want to learn more about a song and music theory.

#### Justification - why/when/where/how it will be useful

It will be useful for collecting statistics on songs and it will be helpful for users who want to understand how to play or recreate a song.

### Programming language(s)

Python 3

### Programming tools / Tech stack

Jupyter Notebook for Research

Machine Learning Libraries

## Learning Challenges -

- Scipy
- Numpy
- Machine Learning
- Audio Analysis
  - On set detection
  - Fast Fourier Transforms

## Hardware / software platform

Computer Application