Many game studios still use linear soundtracks despite other music composing methods being out there, resulting in methods such as generative music not having widespread attention around the game industry. This is a problem because linear soundtracks aren’t as dynamic or efficient at transitioning compared to other methods, and listening to the same loop over time starts to become repetitive and less effective against the player’s emotions.

To approach this problem, a video game with a beginning to end is to be designed and developed which supports multiple methods of composing soundtracks, one of those methods has to be linear and the other being an experimental choice of either adaptive or generative music. Using a between-groups method, participants will invited to play through the game after they have filled out a consent form which explains the tasks they’ll be completing. One group will get to play the game as it plays linear soundtracks, while the other group will play it with the experimental method of playing music. Hardware will be used to discover each player’s emotions, such as using a heartrate display, and each participant’s session will be recorded with a webcam which helps to get results unobtainable by simply filling out a survey.

Audio has been a fundamental element for video games since the first ever game titles. Tennis for Two used audio queues throughout gameplay in 1958. It often plays when interaction takes place, such as when the player presses a button, or their character collides into something. Music is a form of audio, and the focused type in this report. It amplifies the viewer’s emotional responses when consuming media, whether that is movies or in this project’s focus: video games.

There are three types of soundtracks that video games may include. The most recognisable is linear, which simply plays a piece of music from beginning to end before looping. With nothing more, linear is a simple form of music. It lacks the additional features to make the soundtrack interesting but possesses less risk of sounding unpleasing which makes it the most popular method. Adaptive soundtracks is another method where music changes in response to events that happen within the game. It has received the alternate name interactive music due to this reason as often these changes are to make the music match how the player may be feeling. These changes could be for example, a layer may be added or removed, or the tempo takes a turn. Lastly, generative soundtracks is the most advanced. Generative music is computer-generated, not only adapting with situations to guide user emotions, but is never-ending.

A problem in the game industry is that many studios still choose linear soundtracks over adaptive or generative music, despite the advantages that they carry to increase gameplay experience. It is expensive to compose adaptive music for a game, compared to linear. Because linear music however is a looping audio, it begins to become repetitive for players listening over time which destroys the immersion. When technology is evolving for games ever since it’s early-debuts in 1958, it makes sense that music should take a step forward in advancing too.

To solve the issue of repetitiveness in videogame music through improving soundtracks.

# Discover what methods can be used inside a game engine through literature reviews.

Reading through literature reviews gives better insight onto the problem, giving an idea of the current state-of-the-art and seeing how this project can use the work of others to find a solution in improving video game soundtracks.

# Design/develop a prototype game that will be used as the proposed solution in research.

The proposed solution will be a video game that contains linear and adaptive (or generative) soundtracks. It will be toggleable on what form of soundtracks play. This is ideal for a between-groups study where one group plays the game with linear music, whereas the other plays with the alternative option.

# Develop the final build with the desired soundtrack methods implemented.

Using either Unity or Unreal Engine, the design prototype will be developed into a final build. To make sure in-game music has a reasonable impact on player experiences, music assets will have to be either borrowed or purchased online.

# Have participants play through the final build to collect primary data.

Participants will be invited to partake in research before consenting. In a between-groups study, one set of participants will be requested to play the game with the setting that it plays linear music. Another group will play the game with adaptive soundtracks. For both sets, participants are required to put on hardware, such as a heartrate monitor and headphones. A webcam will be used to collect facial readings. When the participant has finished playing the game, they are asked to complete a survey which will allow them to answer questions on how they may have felt emotionally during gameplay. Each participant’s data is kept and recorded for research.

# Use primary data to see which method of soundtracks has a better impact on emotions.

Using readings from hardware and survey answers by each participant, data will be used to tell which method of soundtracks had a better impact on emotions.

With assistance from the project’s supervisor, a term that helped greatly in this project is generative music. Although it is a method of video game soundtracks alternative to adaptive music, the term alone has helped discover a journal article that has helped see the current state of the art in video game music. The source is called Generative Music in Video Games: State of the Art, Challenges, and Prospects. This source shows what current issues that music is facing within the gaming industry, explaining the lack of use of adaptive and generative music in modern titles, as well as the repetitiveness of linear music. It is stated that part of why generative music isn’t often used is because it can produce worse music than linear according to the composer of the game No Man’s Sky. If it isn’t used often, however then it could be theorised there’s a lack of practice in the implementation of generative music.

This source helped bring the idea that this project could serve to see how effective adaptive or generative music would be in games. Almost every game has the issue that music loops continuously to the point of repetition. Encouraging the use of generative music in video games can solve the issue of losing immersion for even players whom have played the same title a lot of times.

The same authors of the prior journal article made a conference proceeding with research. The source is called Music Matters: An Empirical Study on the Effects of Adaptive Music on Experienced and Perceived Player Affect. This source backs up the point that better methods of soundtracks are lacking in video games when they have better advantages over linear music. It makes the point that research on generative music can just improve games, but also assist making generative systems better. A proposed solution for this conference proceeding is shown which is discussed later in the report.

This study gave the idea that a game for a proposed solution would help gather primary data. It also offers ideas on how data could be stored when carrying out participant research. Because this source has carried out research with participants, it further proves that music influences emotion during video games which gives reason for this project to continue off similar work.

A notable product like this project’s proposed solution is Galactic Escape. This was a proposed solution found in one of the literature reviews of this project. Galactic Escape helped in reading tension that participants gave off while music played. It explores the different forms of tension and discusses how it can be produced through games and music. The research project that this proposed solution served for came with tables and graphs to neatly contain data for comparing results with, as well as making the study easier to read.Galactic Escape is comparable to the proposed solution because they both complement their associated projects in trying to improve music for video games.

‘How Can Video Game Atmosphere Affect Audience Emotion with Sound’ is a conference proceeding where participants would play through a game while having their facial expressions recorded on camera. This would help to find out how participants may feel when playing through games. The idea to use a webcam to read player emotions came from this conference proceeding since it can answer questions that participants may otherwise be unsure how to answer. Although it specifies sound rather than music, it proves that sounds overall in any form is an important aspect of video games to increase the emotions of players. This research is comparable because it focuses on seeing how audio can tamper with how players approach video games.