**Dissertation Introduction**

**Research Question:**

*How can procedural level generation be used to lengthen a player’s playtime and improve player engagement in 2D platformer games?*

This project aims to answer this question by designing and developing a procedural level generation model in the Unity game engine which will create a series of levels for a 2D platformer game. This will be done using procedural techniques such as Noise Functions, particularly Perlin Noise, and a series of Markov Chains which will create new and unique levels on demand.

**Aim and Objectives:**This project aims to investigate and analyse the benefits of procedural generation algorithms when creating levels for 2D platformers, then consider how this could be used to lengthen the time a player can stay engaged with the game. This will then be tested by several participants who will use the generation model and fill out a short questionnaire which will provide feedback into how they feel the level generation in the project compares to levels they have played in other, more traditional platformer games. The objectives of the project can be summarized as:

* To research current 2D platformers using procedural generation, for example Spelunky, and consider how this could be improved upon using my own methods and techniques.
* To utilise programming techniques such as Perlin Noise and Markov Chains to implement a procedural level generator using the Unity game engine.
* To evaluate the feedback provided by participants to consider how procedural level generation compares to traditional level design in keeping players engaged for a period of time.