

Problem

- Modern games create entertaining, exciting, and immersive game experiences with
 - Story, gameplay, game design, and more
- One aspect that has been static for most games is the music
- Most games typically use music to:
 - fill the background noise
 - create an atmosphere for the game
- The few that do use the music to a greater extent still fall short

Solution

- Our project aims to bridge this disconnect and create an experience driven off the music in the game itself
- Our game will use the music to manipulate several functions in the game environment
 - So that the player must focus on not only the game, but also the music to gain an advantage
 - An approach that has been missed by most modern games
- Some examples:
 - Enemy actions being decided by the music at the time of the action
 - Randomized game environment layouts and objects
 - Unique and various encounters for the player

Development

- Research and development on effective methods to analyze the playing music and gain data for use in the game
- Originally used SDL2 and SFML for image displaying, rendering, input, and music handling
- Changed to Unity Engine to handle these aspects with updated and more cohesive tools

Attack of the Beat

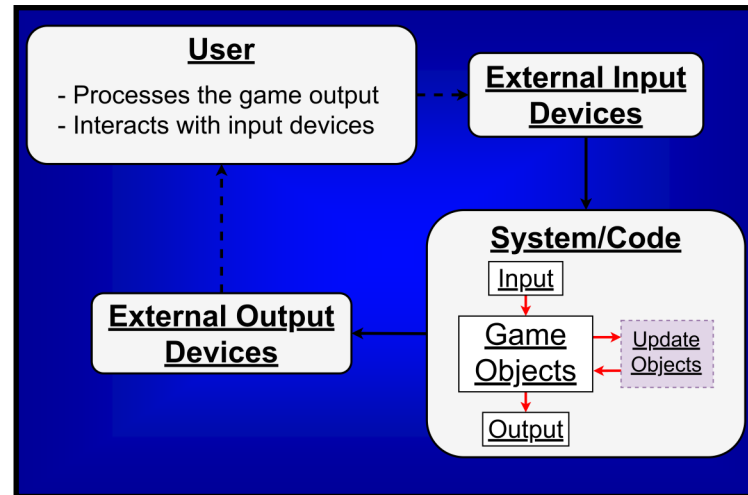
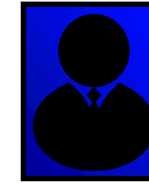


Figure 1: Project Design Diagram



Challenges

- The change to Unity Engine alleviated several challenges with the original design of the game
 - But also introduced several new ones
 - Learning the essential parts of Unity development and the specific parts needed for our project
- Analysis and adaptation of the music to get an accurate “feel” of the music playing in the game
 - Any disconnect would make the nullify the intended experience
 - Overall, took several trials and is still being adjusted



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Results

- The game has working base features and object interactions necessary for gameplay and additional developments
- The game successfully analyzes the playing music during runtime to adapt components of the game environment

Future Plans

- Make the game reaction to the current more accurate, adaptable to more genres of music
- Create additional game depth and mechanics
 - Additional player/game customization
 - Additional/improved game enemies and game logic for these enemies
 - Manipulations to the game music from events in the game
- Improve and create new sprites and animations for these additional/existing objects and

Overall, improvements to make the game have more replay value, be accessible for a wide range of players with different music preferences, and make the essential mechanics of the game accurate to these additions.

