Project Background

Synaesthesia is a rare perceptual condition in which the stimulation of one sensory or cognitive pathway leads to an automatic, involuntary experience in a second sensory or cognitive pathway. While rare, synaesthesia occurs more frequently in populations of artists, musicians, and people involved in the creative industries. This project aims to model the phenomenological aspects of sound-to-color forms of synaesthesia. Specifically, the client is interested in the translation of sound to color/shapes, as studying this form of synaesthesia can help gain insight into the unconscious reality of the brain.

By developing this tool, the project team hopes to provide additional insight into the unconscious reality of the brain which will complement the client's research on the topic, and to provide an easily accessible method for people to express their synaesthesia.

❓ Problem Domain

The current diagnostic tests for synaesthesia focus primarily on the grapheme-color form, which examines the association between colors and shapes or letters. However, there are limited tests that concentrate on the translation of sound to color or shape.

The client is seeking assistance to develop an online tool that performs two-dimensional color consistency tests, incorporating music as a stimulus. The tool will allow for more diagnoses of synaesthesia online, instead of relying on expensive FMRI machines. Moreover, the tool can provide individuals with synaesthesia an avenue to express their unique experiences.

To design the tool, the project team will need to determine the domain of sounds and colors/shapes used in the tests. One approach could involve playing similar notes at different times during the test and assessing if the user responds similarly to a previous answer. Consistent responses would indicate a reliable domain of sounds and colors/shapes for the tests. Additionally, the project team will need to establish the optimal number of questions, time limit restrictions on sound played, and other parameters to ensure the effectiveness of the tests.

💡 Scope of Solution

The proposed project involves the development of a web-based tool or application designed to test for audio-to-visual synaesthesia. The test will involve playing single tones or songs and asking the user to select or describe a color and/or shape associated with the sound. The user will provide their answer within a two-dimensional space, using a color picker or through text-based responses. The user will also describe the shape either textually or through a survey/questionnaire. The tool's evaluation will be based on the consistency of the user's responses to similar tones. To ensure consistency, the user will listen to similar tones at different stages of the test. The proposed tool will be made easily accessible to the public and designed for ease of use. While three-dimensional space was considered for the test, it was determined to be out of scope. Overall, the proposed tool aims to provide a simple and accessible means for testing audio-to-visual synaesthesia, which can offer valuable insights into the workings of the brain and contribute to the advancement of research in cognitive neuroscience.