Algorithmic Aria

Navigating the Melodic Maze of Musical Preference

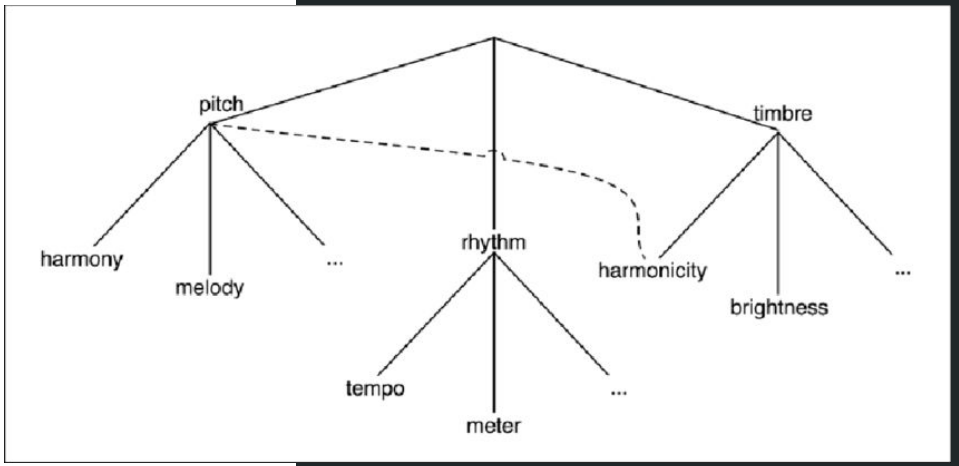
Advik Rai

Why pick music for research

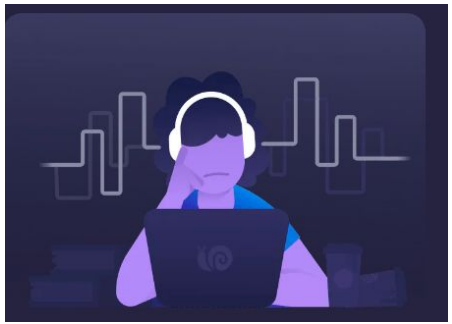
- HUGE fan

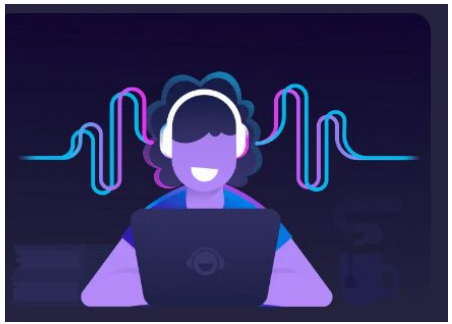
Operating Definitions

- **Affective Algorithmic Composition [AAC]**
  computer-aided composition techniques
  to generate music with specific emotional qualities
- **Facial and Eye-movement Recognition**
  using computer vision technology to analyze
  and interpret facial expressions and eye movements



Background





- Music is becoming popular as non-invasive medical intervention
    - “it is the act of [the patient] making a choice that determines the greatest effectiveness of the [musical] procedure”
- AAC-generated music can affect your brain directly
- real-time user input can highly personalize this music for stronger effects

Research Question

How can algorithms predict the music a person connects to based on observing sessions paired with facial and eye-movement recognition, with a vested interest in musical components like melodic elements, chord progressions, etc. instead of the historical data aggregation methods currently in place?

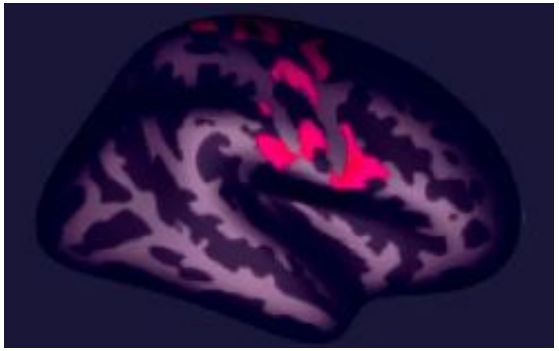
Hypothesis

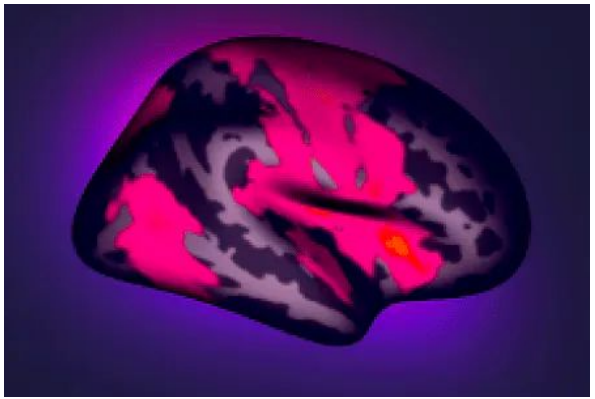
By using computer vision in conjunction with the knowledge of specific musical components, algorithms will be able to make reasonably accurate predictions (60% or higher) for the kind of music the user will find enjoyable, and generate such music to be tested.

Rationale

- Lack of research
- Music intervention can save money
- Benefits + undiscovered potential
  - reduced 4.4 mg MEDs opioids

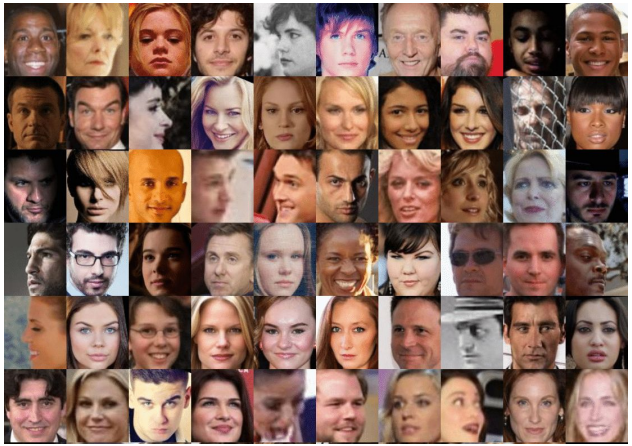
    in ~5,000 surgical patients





Limitations

- privacy concerns
- factors indiscernible from computer vision alone
- lyrics, artists, etc.) are not captured
- computational resources

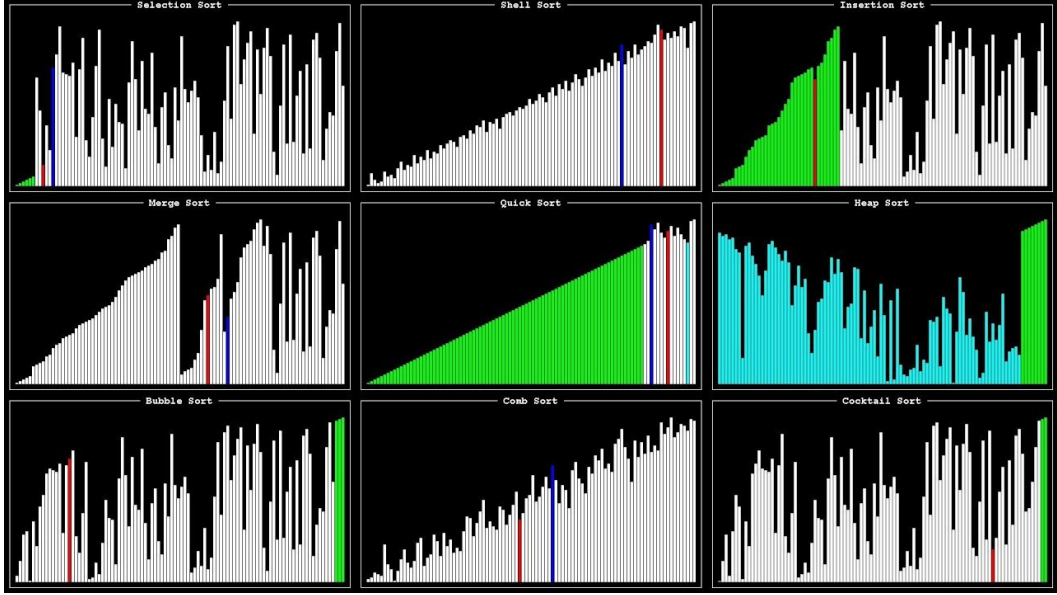


Next steps

Contacting experts

Start designing algorithms

How is data overload solved



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