An Intelligent Assistive Human Emotion Recognition and Adjustment System

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Nowadays, depression and anxiety are severely affecting teenagers' daily lives and music therapy is a widely accepted approach to promote children's emotional health. However, improving the adaptive capability of treatments is becoming a heated and challenging topic within scholarly literature, which is an urgent issue to be addressed. To solve this problem, this study aims to develop a system that generates the appropriate music based on patients' emotions. The patient's emotional conditions are detected and transferred to electrical signals, which is processed via the facial recognition system. The pre-defined offline model will generate the corresponding music based on Russell's dimensional valence-arousal emotional space, and the entire process will be repeated until the emotional status achieved the desired value. A Bayesian classifier trained on a music-emotion dataset is used to assess the performance of the system, by comparing the predicted emotions associated with the generated samples to their intended effect. Both qualitative observations and quantitative results from the Naïve Bayes classifier suggest that the system can generate music to achieve desired emotional responses with a high accuracy. A set of subjective and objective benchmarks is proposed if the intelligent system is tested with human participants in the future.

Awards Won:
NC State College of Engineering: Award to attend NC State Engineering Summer Camp