

# The Soundtrack of My Life: Adjusting the Emotion of Music.

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## Abstract

In this position paper for the CHI2015 workshop “Collaborating with Intelligent Machines,” we propose an application to easily adjust the emotion of a musical melody by using predefined settings. For the adjustment of the melody we rely on music production rules and musical structural characteristics related to predefined emotions that have been defined by prior work.

## Proposal

Music plays an import role in our lives. Out of 162 emotion regulation strategies, listening to music has been listed as the second strategy that people most often use [6, 9]. This is not surprising, as music has shown to be able to induce bona fide emotions [7, 12].

Professional composers have shown to be able to express effectively the intended emotion of their music piece to their audience [10]. Although, we intuitively would say that the emotion of a music piece is conveyed by the lyrics, studies indicate that the piece’s emotion mainly lies within its melody. Even when lyrics and melody conflict in their expressed emotion, the melody has been proven dominant in emotion determination [1]. This provides opportunities to adjust the music piece’s emotion to any given situation regardless of the lyrics.

In this position paper, we propose an application that can adjust the emotion of a music piece in a simple manner. To adjust the emotion of a song, we rely on production rules. It has been argued that the experienced emotion of a music piece is determined by a multiplication of features: structural features, performance features, listener features, and contextual features [8]. A short description of each feature is found below.

- Structural features:
  - Acoustic as well as the foundational structures of a piece that makes up the music.
- Performance features:
  - The manner in which a piece is executed by the performer. This includes physical appearance, reputation of the performer.
- Listener features:
  - Social and individual identity of the listener (e.g., personality, musical knowledge).
- Contextual features:
  - Location and occasion where the music piece is played.

The magnitude of the felt emotion increases as more features are positively related. The effect of each feature is compounded by one another. As performance features are not adjustable in the context of the application as we propose, we further focus only on the other features in this position paper.

Previous work investigated the range of different musical structural characteristics to communicate emotions. For example, happy music has been identified with a mean of 4.984 notes per second, while sad music has 1.333 [2]. With this information we propose predefined buttons in the application that can adjust music structural features according to the desired emotion (see Figure 1 for a mock-up UI).



Figure 1: Mock-up of a music player interface that adjust the music according to the chosen emotion.

Similarly, buttons could be created for contextual features in the same way as proposed for structural features. Often the desired emotion in a certain context is already known (e.g., sad music at a funeral). Instead of buttons with emotion labels, buttons with predefined context could be created that in turn adjust the musical characteristic of the music piece to fit the context.

In addition, a more personalized approach is possible by depicting the listener features. A possible focus of listener features is personality. Some studies have shown that there are individual differences in how people perceive (e.g., [11]) and prefer music (e.g., [4]). For example, high agreeable or neurotic people tend to have stronger sad feelings [11]. Based on one’s personality, a musical emotional adjustment can be strengthened or weakened. For example, sad music has been identified with a mean of 1.333 notes per second, with a lower bound of 1.112 and an upper bound of 1.554. Based on one’s personality it can be decided to adjust the music piece more towards the upper -or lower bound of the emotion.

With this position paper we join the emergence of music applications that include personality and affect information (e.g., [3, 5]). Our proposed application supports easy music creation for every situation by adjusting the conveyed emotion of the piece. It can also be useful for off-site collaboration in the creation of music by being able to easily try out different emotional settings.

## Acknowledgements

This research is supported by the EU FP7/2013-2016 through the GiantSteps project under grant agreement no. 610591.

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