Jamoora: A Music Interpreting Robot

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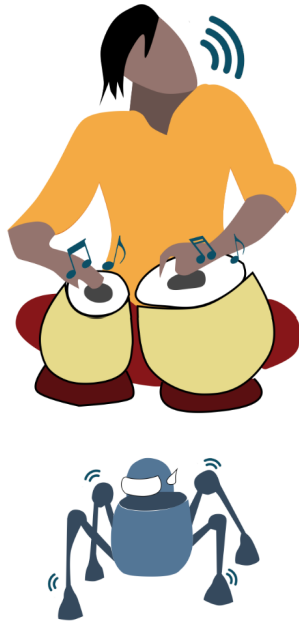Technology
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ABSTRACT

Jamoora is a performer in Indian traditional folk theatre who plays the role of a sidekick. We propose the concept of implicit control of Jamoora, a robotic puppet, using music and storytelling. The puppeteer controls the actions of Jamoora using keywords woven into a story told by him while playing live music which sets the emotional tone. We take inputs from Indian musical instruments, determine the corresponding *raga* - an organized sequence of musical notes associated with emotions and ambiance [2], and then map the associated emotions to the body language of Jamoora. This integration of puppetry, music, and speech creates a rich medium of storytelling.

CCS CONCEPTS

• **Computer Systems Organization** → Embedded Systems; • **Robotics**; • **Human Centered Computing** → Interaction Techniques; • **Hardware** → Digital Signal Processing;

Figure 1: Jamoora (Animated Character) is controlled by music and story.
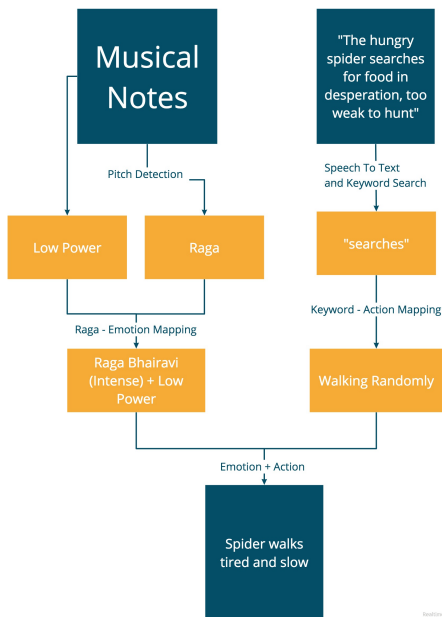
Figure 2: Example Scene: A spider dying of hunger, tries to find food. While searching for food, the music played would be serious (*Raga - Bhairavi*) and the script would be - "The hungry spider searches for food in desperation, too weak to hunt".

KEYWORDS

Audio-Analysis,Speech to Text, Animatronics, Sentiment Analysis

INTRODUCTION

Puppetry is an ancient art form that animates our ideas [1]. It can include narration of a story and employ music to depict the mood. These elements introduce the freedom to create subtle ideas which would otherwise be hard to express. We want to enable the puppeteer to combine multiple forms of expression to perform an act which would otherwise take multiple performers to accomplish. As seen in figure 1, *Raabta* (meaning connection) is a system which controls a Jamoora's moods through music and it's actions by keywords woven into a narration.

The two means of input are music and story. In the first part, we receive the audio input from an Indian musical instrument through a microphone. This audio signal goes into the processing unit where sequence of musical notes is detected which corresponds to a particular *raga*. This *raga* and the power of the audio signal is associated with a body language. The script is read out which is simultaneously taken as an input from another microphone. This microphone sends the audio signal to the processing unit which converts it to text. We then do a keyword search and infer the motion requested.

The processing unit combines the motion trigger and the musical sentiment to make Jamoora go through a motion sequence with an appropriate body language. Figure 2 gives an example of the complete process of information flow for a sample scene. Many folktales involving the animation of animals and their emotions can be presented using such a mechanism.

REFERENCES

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