

Music Generation with Deep Learning Techniques

Emotional Music Generation using Deep Learning According to Text Emotion Analysis

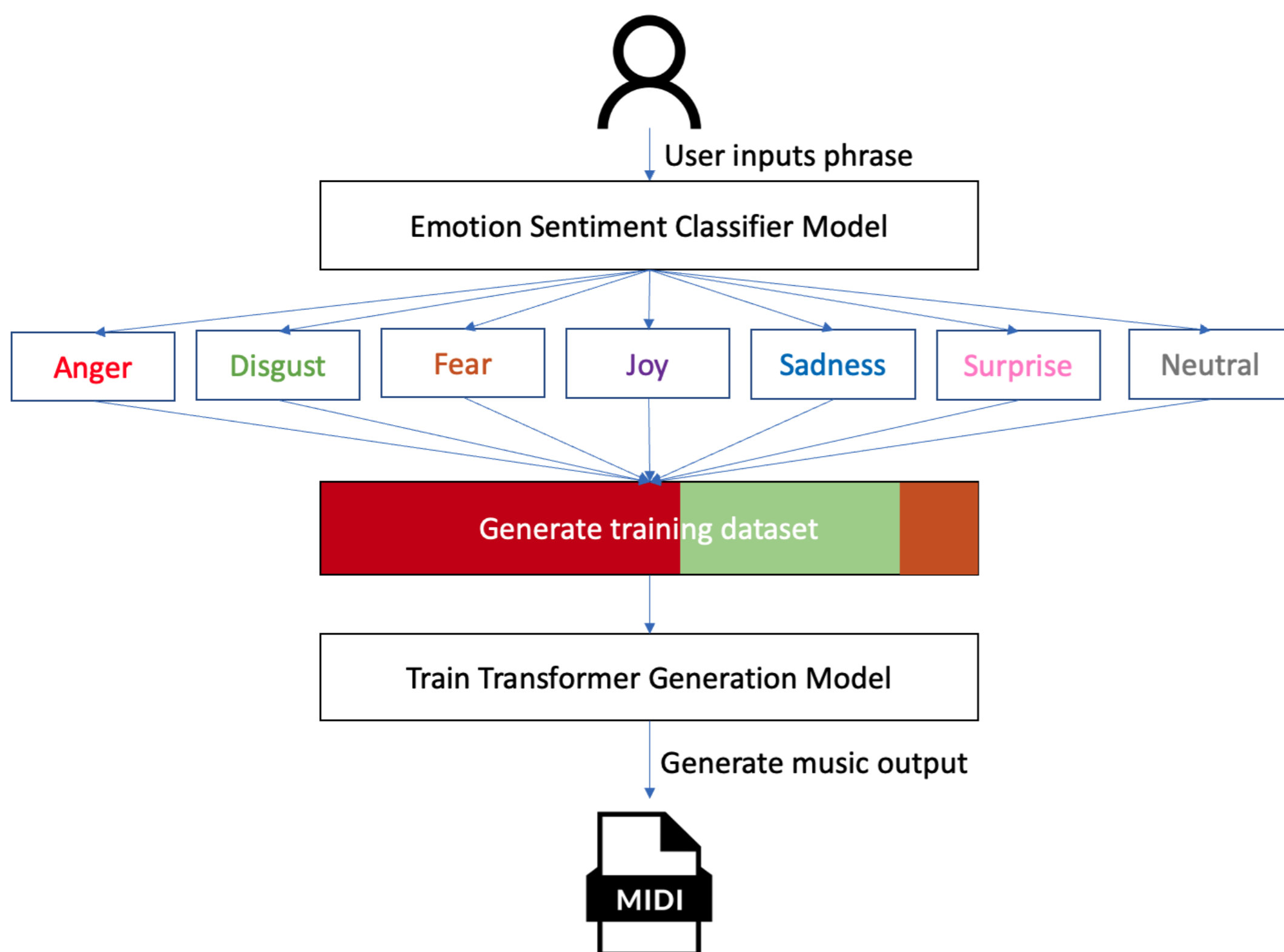
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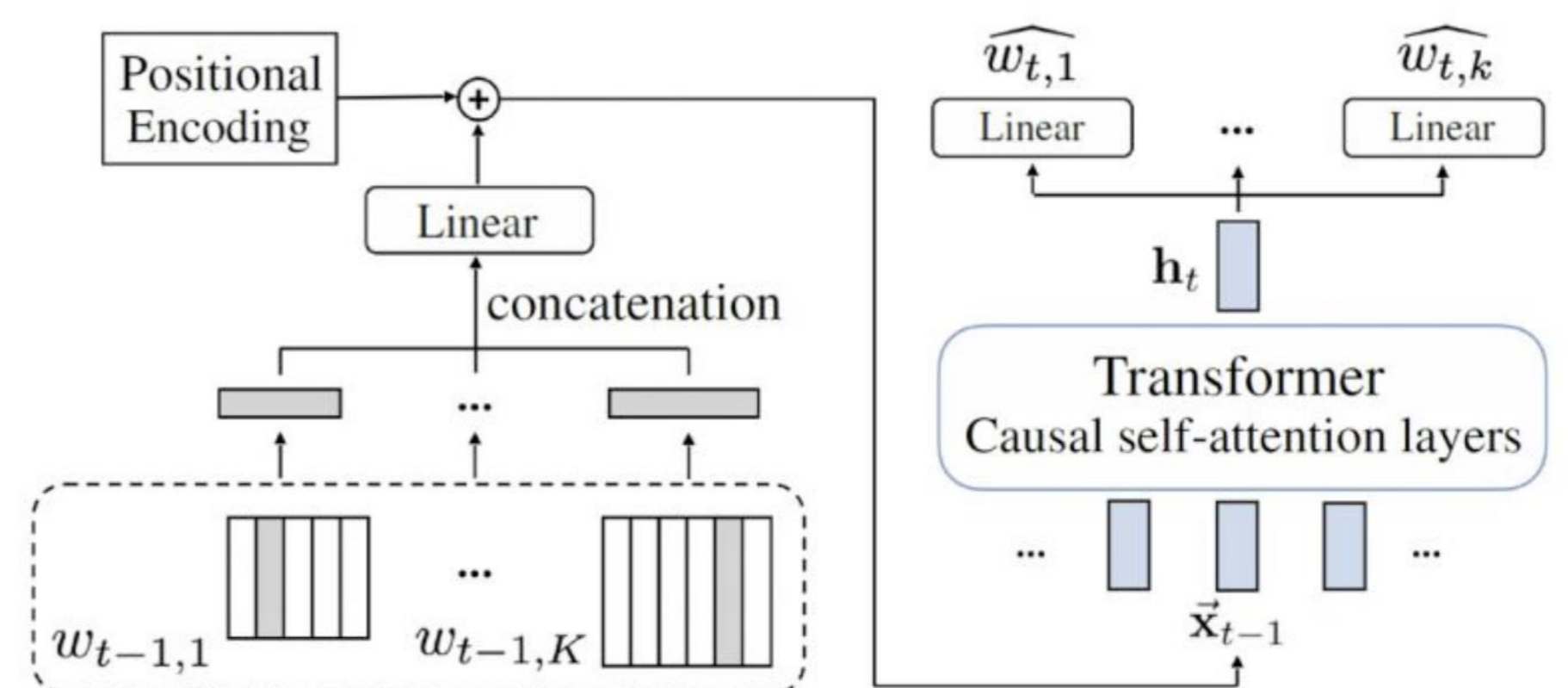
Project Objectives:

With the advancement of artificial intelligence techniques in recent years, the task of music generation has gained much attention. Music is an art form that naturally invokes emotions, from composers and listeners, and various researchers have explored generating emotive music which can influence the feelings of people. However, there has been few research done on allowing users to control the music generated automatically. There are various ways that users can input information and textual data is one of the ways for users to input information to guide the direction in which the music should be generated. Hence, this project proposes a method to combine sentiments of textual data from users to generate suitable emotional music.

Model Architecture:



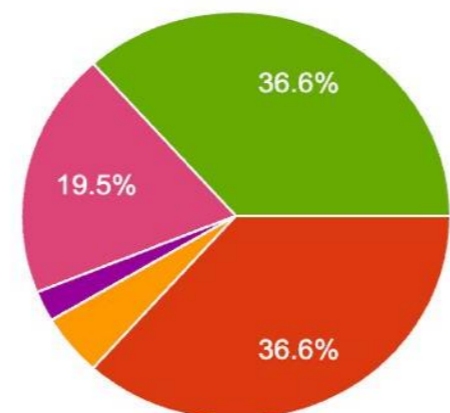
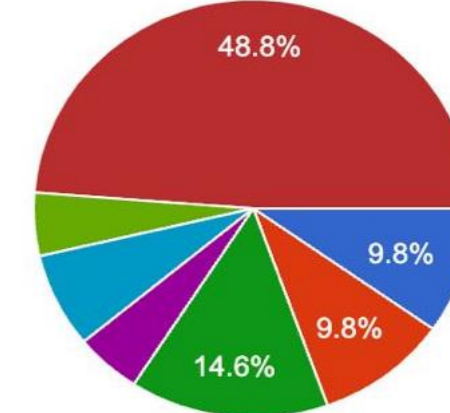
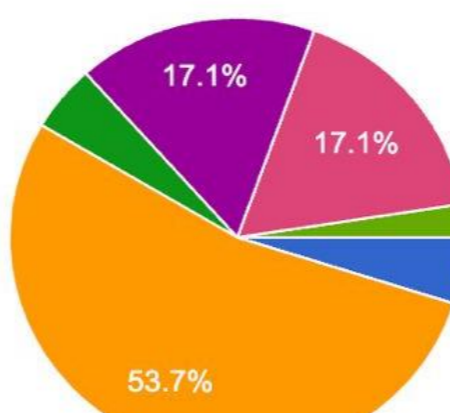
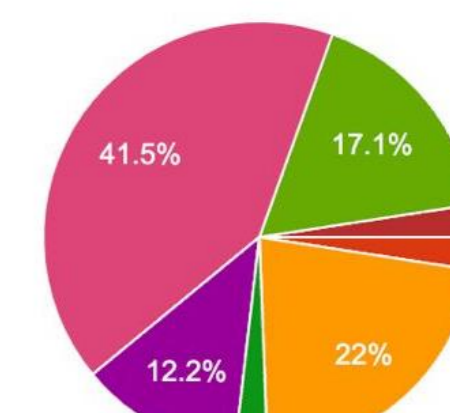
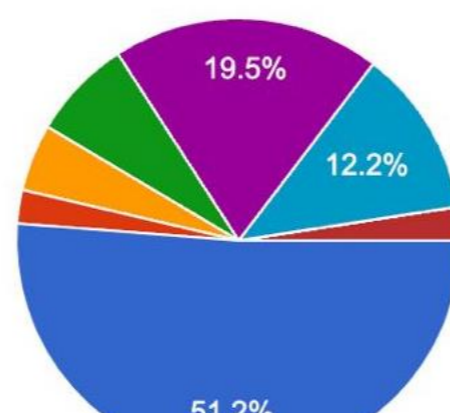

Transformer model:



Firstly, using a fine-tuned RoBERTa model that classifies sentiments as emotions, we identify the emotions present in textual data as 7 basic emotions. According to the scores of these emotions, we generate a random training dataset in the proportion of the top 3 emotions. Next, we train a Transformer model to generate music using this new dataset.

Results & User Study:

The following prompts were used to generate 5 music samples. 41 users participated in a user study to choose the prompt that best suited each of the music sample out of 9 different prompts.

Sample	Prompt	Results	Sample	Prompt	Results
1	This movie always makes me cry		4	That house is creepy	
2	I'm excited to travel		5	This scenery is breath-taking	
3	I am outraged		 <p>Listen to the music samples by scanning this QR code!</p>		
		<ul style="list-style-type: none"> ● I am outraged ● The funeral was solemn ● I'm excited to travel ● That is annoying ● I was taken aback by the news ● This food tastes horrible ● This scenery is breathtaking ● This movie always makes me cry ● That house is creepy 			