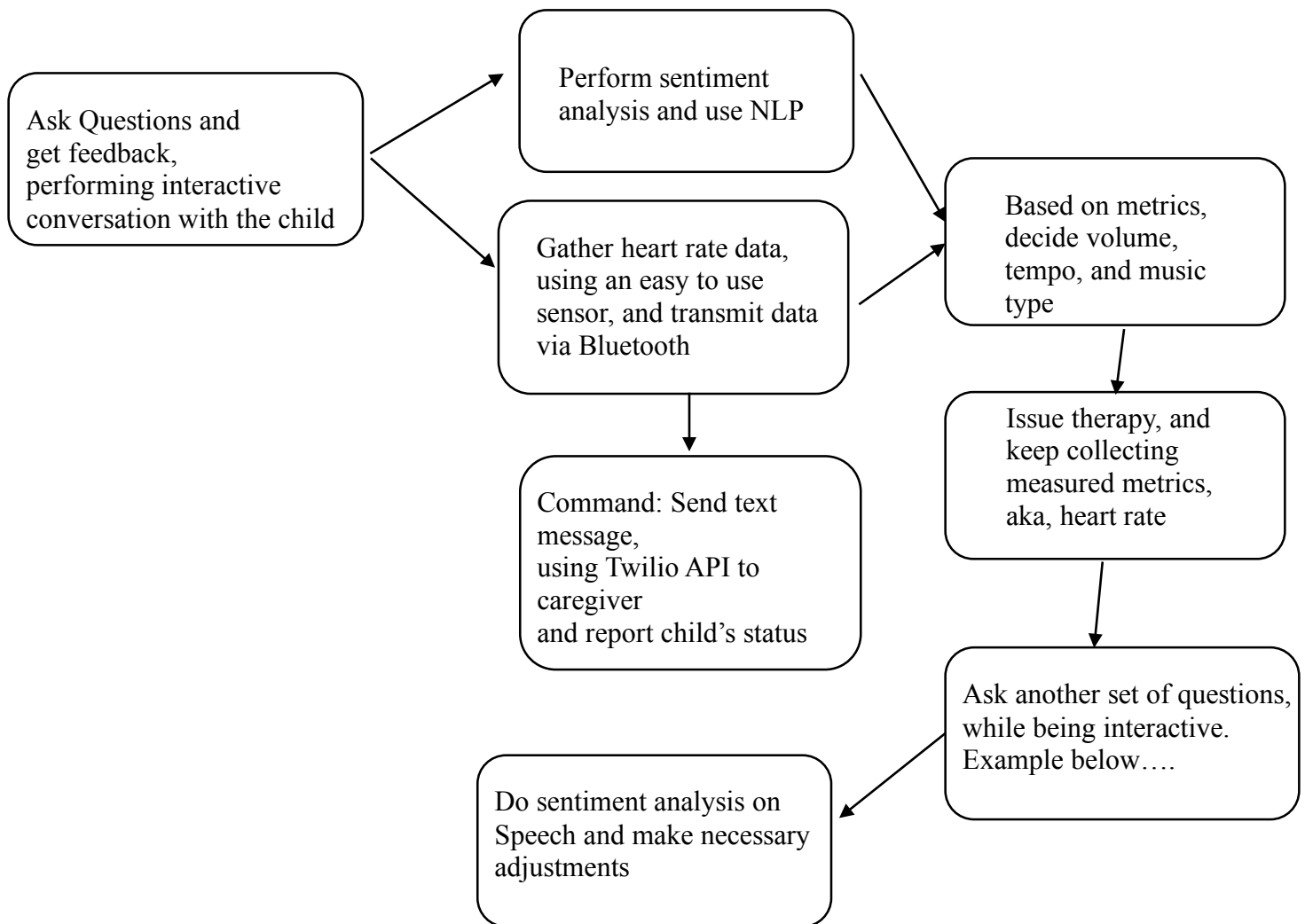


SYSTEM ARCHITECTURE



Sample conversation:

```
var nodes = [{ "node": 1, "message": "Do you feel any type of pain today?", "yes": 2, "no": 3 },
{ "node": 2, "message": "I'm sorry to hear that. I hope I can help make you feel better. Have you been in pain all day", "yes": 4, "no": 5 },
{ "node": 3, "message": "I am happy to hear that you are free from pain, Samantha! Would you like to listen to a sing along song?", "yes": 6, "no": 7 },
{ "node": 4, "message": "I remember that vanilla is your favorite flavor of ice cream. With vanilla meaning the pain is not too bad, chocolate meaning the pain i really bad, and strawberry is in the middle, would you say the pain is more like strawberry?", "yes": 8, "no": 9 },
{ "node": 5, "message": "Did your pain just start?", "yes": 10, "no": 11 },
{ "node": 6, "message": "Ok, I will start with, Do you want to build a snow man. Is that ok?", "yes": 12, "no": 13 },
{ "node": 7, "message": "Ok. Would you like to listen to some music?", "yes": 14, "no": 15 }, // Answers & descriptions
{ "node": 8, "message": "I'm sorry you feel this way. I would like you to listen to this song. I will speak with you right after.", "yes": 0, "no": 0 },
{ "node": 9, "message": "I'm sorry you feel this way. I would like you to listen to this song. I will speak with you right after.", "yes": 0, "no": 0 },
{ "node": 10, "message": "I'm sorry you started to feel this pain. I would like you to listen to this song. I will speak with you right after.", "yes": 0, "no": 0 },
{ "node": 11, "message": "I'm sorry you feel this way. I would like you to listen to this song. I will speak with you right after.", "yes": 0, "no": 0 },
{ "node": 12, "message": "Great!", "yes": 0, "no": 0 },
{ "node": 13, "message": "Ok, let's try Mulan.", "yes": 0, "no": 0 },
{ "node": 14, "message": "Great, I will start the music for you.", "yes": 0, "no": 0 },
{ "node": 15, "message": "Ok. I am really happy you are pain free. Talk to you next time!", "yes": 0, "no": 0 },];
```

In order to successfully design the musical therapy to relieve children who are suffering chronological pain, the following three major content pieces must be included...

Content 1: Build basic dialogue/conversation with children who are suffering from chronological pain. Alexa can assessment the basic level of children's chronological pain level and locate the relevant conversational strategies with children.

- This addresses sub-targets 1
- This provides the user with the pre-medical assessment to measure the chronological pain.

After the pre-assessment, Alexa can select specific music to match (musical rhythm, tempo and dynamics) children's chronological pain depending on the children's level of chronological pain.

- This addresses sub-targets 1
- This provides the user with the pre-medical assessment to measure the chronological pain.

Encourage children to visualize the auditory image of the image and describe to the Alexa. By the end, Alexa can send a text-based conversation to children's parents or caregiver and document the whole conversation happened between Alexa and the children with chronological pain.

- This addresses sub-targets 2 and 3
- This provides the user with the pre-medical assessment to measure the chronological pain.

Scope: Functionality — No more than three maximum (even this can be too much)

1. Functionality 1 → A built in conversational dialogue with children who suffering chronological pain.
 1. Alexa skills are able to briefly measure the level of pain and start conversation with children.
2. Functionality 2 → Select music to relive children's pain based on their chronological pain level.
3. Function 3 – Send text message to document the conversation with children to parents and caregiver.

Research Finding

Musical Therapy:

- <http://bjm.sagepub.com/content/5/2/14.short>
- <http://www.tc.columbia.edu/arts-and-humanities/music-and-music-education/>

Chronological Pain

- <http://pediatrics.aappublications.org/content/130/5/918.full>
- http://well.blogs.nytimes.com/2016/06/27/when-its-not-just-a-boo-boo-the-push-to-treat-childrens-pain/?_r=0