Natural User Interaction AIoT

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Background

With the development of technology, lots of digital devices appear in our daily life and bring us convenience. Instead of providing loyal service, now, we have a higher expectation of these service. We want them to connect with each other, work as a whole and use artificial intelligence to improve their service level.

Nowadays, music has become an inaccessible part of the lives of young people. With the help of music, they can relax in their spare time, have a sound sleep, and make themselves more focused so as to improve work efficiency.

With the increasing attention to health, smart bracelet has gradually become a part of young people's life, because it can provide a lot of Information about the state of our body. If we could make full use of these information, there's no doubt that we could improve the experience of listening to music.

Application Scenarios

Smart song recommendation

Many music applications have intelligent song recommendation functions, such as Netease Cloud Music, QQ Music and so on. These applications make use of users' listening history to offer precise recommendations. But in fact, even for the same person, his/her preference for music changes in different situations.

For example, if I am jogging, I would like to listen to some rhythmic music. If I am working out i the gym, I prefer to some powerful music. With the information of **heart rate** and **running speed**, it is possible to conjecture the current state of user and recommend music more accurately.

Flexible music playing time

For some people, occasionally they have insomnia. At these night, they may like to put on headphones and listen to some light music to help them fall asleep. But let the music play all night is not a good idea.

Most music applications have a time off function, but in some case, when the timer have counted down, people are still awake and have to set another timer. With t**he sleep information** provided by the smart bracelet, the application could pause the music when the user is in a deep sleep.

Diversified shortcuts

As a loyal user of Apple products, I really like airpods for the functions of automatic connection and automatically switching connection devices. However, since it only has two shortcut, one for pausing and another for switching to next song, it is impossible to adjust the volume without the interaction with the phone. One way is taking out the phone and pressing the volume control button, but if it's not convenient to take out the phone, the only way is to talk with Siri, which is kind of awkward, especially when there are people around.

Some shortcuts in the smart bracelet will provide more **available interfaces** for the music applications, so that it will be possible to adjust the volume or LIKE the song without taking out the phone. It is obvious that as an electronic device worn on the wrist all the time, the smart bracelet is more accessible than the phone, which is always in the pocket or in the bag.

Functions design

Smart song recommendation

Accessible information:

- Heart rate
- Speed of movement

Different situation:

- level 1
    - Motion
    - Rest
    - Sleep
- level 2
    - Judge the intensity and type of exercise

Flexible music playing time

Accessible information:

- Amplitude and frequency of action

Different stages:

- level 1
    - Awake
    - Asleep
- level 2
    - Distinguish the different stages of sleep and gradually turn down the volume. When it is mute, pause the music.

Diversified shortcuts

- level 1
    - Design 2 distinguishable shortcuts for "adjust the volume" and "like" functions
- level 2
    - Design 4 distinguishable shortcuts for more functions

Novelty

As a wearable device, smart bracelet can collect a lot of information about the user. The application of health care has developed in the past decades, but other applications have a large development space. With the popularity of IoT, we could utilize information provided by different devices and improve life quality.