

Vehicle-Based Health Status Analysis Monitoring Platform

Shoujin Wang^a and Xing Huang^b

School of Information & Control engineering, Shenyang Jianzhu University, Shenyang, China

^a 23917240@qq.com; ^b 1748652324@qq.com,

Keywords: Health status analysis; Monitoring platform; Car application; Mobile Internet

Abstract. With the improvement of people's living standards, people pay more and more attention to health. No matter which industry they are in, physical health is very important. Only a healthy body can fully engage themselves in career and family. Therefore, it is especially important to be able to perform health tests on your body at any time. In the context of the mobile Internet, after conducting a large number of market surveys, in order to enable users to detect and record their physical condition at any time in the car, the team designed and developed this "health state analysis monitoring platform" based on Android system. Car application. Moreover, the rapid development of electronic information technology and the continuous changes in the automotive industry have brought together modern automotive electronic information technology and network technology. Therefore, the coordinated connection between mobile devices and in-vehicle systems has become an inevitable trend.

1. Major Software Research the Following Content and Issues that Need to be Solved for Each Content.

The software has five main functions: data entry, daily physical examination, real-time monitoring, music appreciation, night mode[1]. The user can use it in the driving environment, and the software also realizes the coordinated connection between the mobile device and the vehicle system. The real time monitoring see Figure 1.

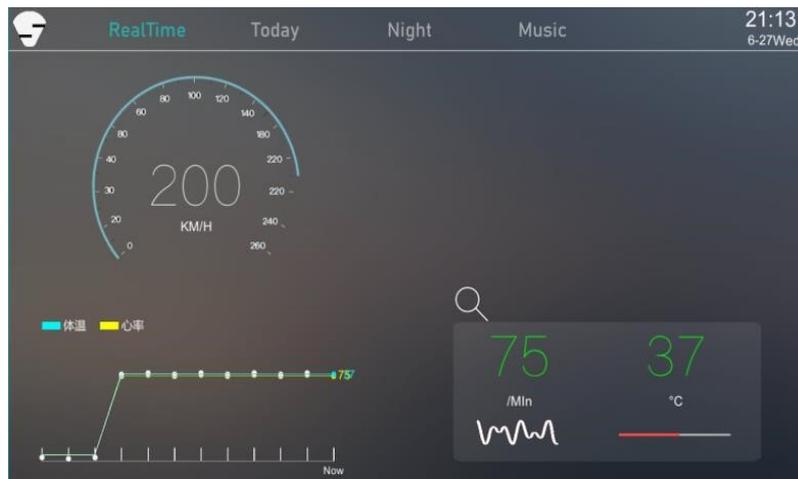


Figure 1. Real Time Monitoring

1.1 Data Entry

Data Entry Open the software, enter the data initialization interface, simulate the driver's detection of each data when the driver enters the car for the first time through local input, and use local data persistence technology to save the data[2].

1.2 Daily Medical Examination

The daily physical examination function will analyze the physical condition of the user according to the data entered in the daily data, and compare it with the data range of the normal person. If it is within the normal range, it will be displayed with a green icon, otherwise it will be marked with a red icon. The score algorithm is then used to derive the daily physical examination

score, which is then dynamically displayed to the user[3-5]. In addition, the software will also perform statistical analysis based on the daily physical examination scores to generate a clustered column chart of the physical condition of the week, and use different colors to visually display the changes of the user's daily physical state, and provide necessary according to the physical examination index. Tips and suggestions.

1.3 Real-Time Monitoring

Real-time monitoring Simulates the real-time data of the sensor by acquiring data sent by another client to the server, and displays it to the user in the form of a line graph and data display[6-7]. In addition, the software provides real-time monitoring of driving speed and heart rate and body temperature. In case of emergency, give corresponding tips and suggestions, and you can call the emergency number to greatly avoid the occurrence of unfortunate accidents and give a car a sense of security. The music Appreciation see figure2.



Figure 2. Music Appreciation

1.4 Music Appreciation

Music Appreciation The automobile industry has begun to catch up with the development of science and technology. Life is increasingly diversified. More and more services are combined with automobiles, mobile, software, etc., and it has gradually become an important space for people to entertain and even work[8]. Requirements are not limited to speed, performance, etc., but also require comfort and entertainment performance. Nowadays, on-board MP3, car DVD and other car music playback devices are emerging one after another, and the external playback device is not only expensive, but also not so satisfactory in user experience. With the music appreciation function, the software automatically synchronizes local songs in the mobile device, and you can switch to your favorite songs at will.

1.5 Night Mode

Night mode When driving at night, the user can turn on the night mode, the page color will be darker than the normal mode, and the user's eye fatigue during night driving will be relieved, creating a comfortable user experience.

2 .Highlights of Product Function Innovation

1 The design of the function is relatively novel, including multiple functions of health measurement, namely: data entry, daily physical examination, real-time monitoring, music appreciation, night mode.

2 Through the analysis of driving big data, clever combination of hardware and software, the smart mobile software is combined with the car to make the car smarter.

3 The application realizes the functions of daily physical examination of the user, real-time detection of temperature and heart rate, and statistics of physical examination scores this week. It also has the function of voice broadcast to indicate the physical condition. In addition to this, we

have added entertainment features that are appreciated by music and the basic functions of speed detection. On the one hand, this application subtly integrates basic functions such as human body examination and vehicle speed detection with entertainment functions. On the other hand, the application page layout is simple and beautiful and easy to operate; the color tone is soft and easy to drive; the data is recorded dynamically; the voice prompt is simple and clear. . We are committed to creating a smart, in-vehicle application that gives users great comfort and convenience.

4 This software is dedicated to creating a simple and beautiful interface in the page design. The design style is similar to IOS. At the same time, it pays attention to the usability of software, and the simple, convenient, clear and easy to use interactive design is designed to bring pleasure and relaxation to users. User experience. The overall color tone takes into account the driving environment. The dark color is more suitable for driver driving, and the night mode is added to alleviate the visual fatigue of the user when driving at night. The Daily physical examination analysis chart see figure3.



Figure 3. Daily Physical Examination Analysis Chart

3. Product Design Advantages

1 software in the LOGO design uses a combination of black and white, echoes the background color of the software, giving people a safe, easy feeling, the application of the simple style of the simple and clear display of the basic functions of the software. The whole of LOGO can be regarded as the basic outline of a person, and the horizontal of each side of the LOGO makes itself an "S" - meaning "body", that is, human body detection, indicating that this is mainly used for The software that detects the physical condition of the person is vivid and vivid, and it is easy to impress the user.

2 The software name of the software "health state analysis monitoring platform" means that the user's healthy body guarantees the safety of a car person, and the purpose of software production and the user experience we are committed to create are presented in a clear and concise manner.

3 In the daily physical examination interface, the image of the doctor and nurse is cute and image, and her intimate reminder also gives the user a sense of security and feels warmth. This also reflects the fact that our team is trying to create the best fit from the user's point of view. The application of the user's mind.

4. Software Deficiencies

- 1 software only Android system, will be expanded to iOS system in the future;
- 2 The production and research chain has not been formed, and data collection is difficult;

3 Less function, low frequency of use, continue to develop in the later stage, increase the function of making calls, and use Bluetooth voice control technology to cover all functions of the whole software. During the driving process, users can use all the functions of the software through voice commands. The software function use case diagram see figure 4.

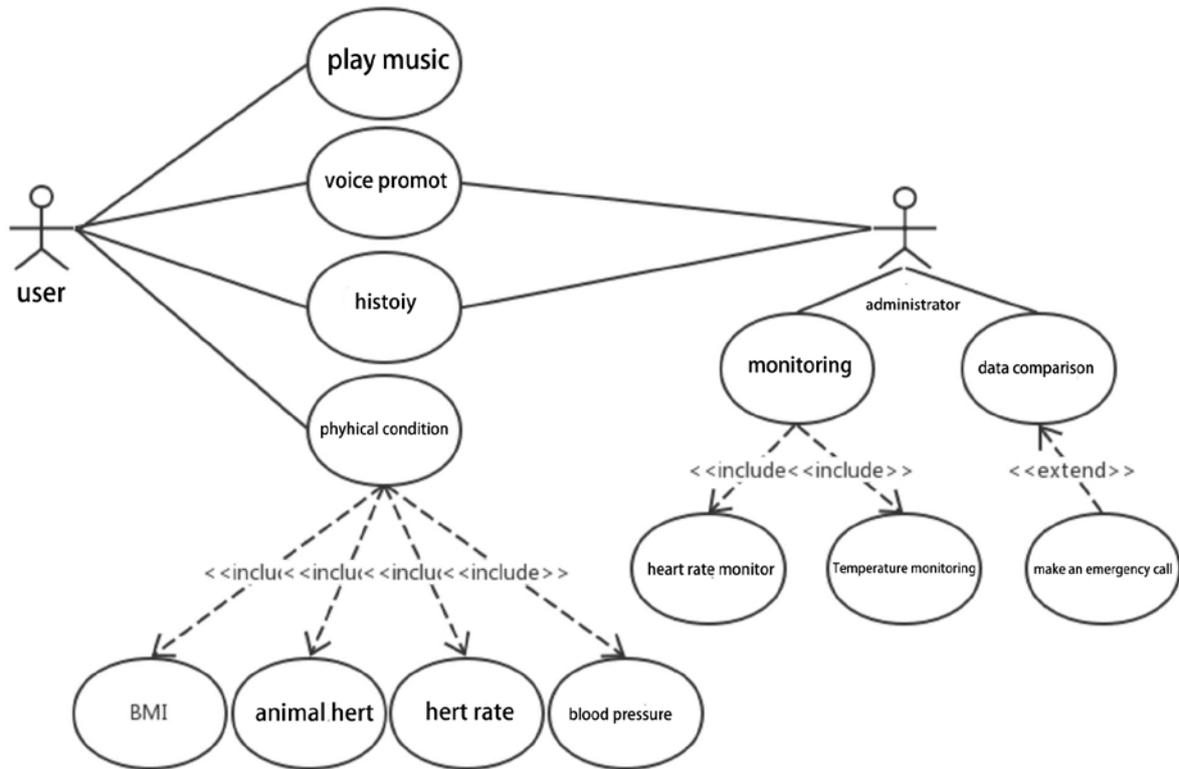


Figure 4. Software Function Use Case Diagram

5. Summary

At present, the main service mode of the health management APP is to collect the user's blood pressure, blood sugar, heart rate and other basic data in real time through the APP or external equipment, and then transfer it to the back-end database to complete the data storage and analysis. Making data into electronic health records is the foundation of health management. The APP application can read the data, and after authorization, the doctor contacted by the user can monitor the physical condition based on the data and formulate or revise the personalized health prescription. Users can even communicate with doctors in real time through mobile devices to obtain telemedicine services. At present, Apple HealthKit, Google Google Fit, Baidu Dulife and other intelligent health management platforms can achieve data acceptance, storage and transmission. The integration of and analysis of these data to form a personal electronic health record or medical record of medical value and to provide effective medical services to customers is the focus of research and development. However, the market for automotive-based applications has not yet formed a good industrial chain, which indicates that the development of automotive medical software has broad prospects.

As a new medical model and tool, mobile medical technology has shown its great potential in the field of health management. It is changing the traditional medical methods and gradually forming a new health management industry chain. In order to more clearly review the situation, seize opportunities, and meet challenges, it is necessary to sort out the current status and problems of mobile medical care.

References

- [1] Wu J , Xu H . Driver behavior analysis for right-turn drivers at signalized intersections using SHRP 2 naturalistic driving study data[J]. Journal of Safety Research, 2017, 63:177-185.
- [2] Wang Y , Cheng L , Chen Y , et al. Building Point Detection from Vehicle-Borne LiDAR Data Based on Voxel Group and Horizontal Hollow Analysis[J]. Remote Sensing, 2016, 8(5):419.
- [3] Yu H , Hu C . A Police Big Data Analytics Platform: Framework and Implications[C]// IEEE International Conference on Data Science in Cyberspace. IEEE, 2017.
- [4] Chen K , Tan H , Gao J , et al. Big Data Based Design of Food Safety Cloud Platform[J]. Applied Mechanics & Materials, 2014, 536-537:583-587.
- [5] Tong L , Hong T , Jing-Hua Z . Research on the big data-based government decision and public information service model of food safety and nutrition industry[J]. Journal of Food Safety & Quality, 2015(1):366-371.
- [6] Gong Y , Morandini L , Sinnott R O . [IEEE 2017 IEEE International Conference on Big Data and Smart Computing (BigComp) - Jeju Island, South Korea (2017.2.13-2017.2.16)] 2017 IEEE International Conference on Big Data and Smart Computing (BigComp) - The design and benchmarking of a Cloud-based platform for processing and visualization of traffic data[J]. 2017:13-20.
- [7] Zhulin W , Dianshu C , Ling L I . Design and Implementation of Personalized Information Customization System Based on Hadoop Cloud Platform[J]. Journal of Jilin University(Information Science Edition), 2016, 34(2):271-277.
- [8] Qian J , Shi C , Wang S , et al. Cloud-based system for rational use of pesticide to guarantee the source safety of traceable vegetables[J]. Food Control, 2018, 87:192-202.