Selection system of fitness program that is customized user utilizing the mobile sensor iOS-based

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Abstract
Recently, people using fitness centers are increasing gradually with high interests in health and exercise. However, Users have struggled to build up the systematic exercise habits and to set goals as well. When the goal is not clear, users count so roughly that they repeat and exercise with their feelings. And also, there could be problems that users workout ineffectively due to a lack of information on the exercise program. Existing system focus on outdoor exercise and there is a case that a workout method obtained by values from sensor is provided. In this paper, a database containing values that users exercise is created in conjunction with the web. After that, many trainers share data and give solutions to users that can choose various programs optimized of their own. it is so systematic that users can set the effective exercise plans and goals actively.

Index Terms: Wellness, U-Healthcare, Smart-Phone, Accelerometer

I. INTRODUCTION

It is the trend that advances in today’s medical technology to improve the standard of living of the people, and in rapidly increasing in the demand for welfare. The desire to improve the quality of life, is based on medical services by utilizing the advanced technology of the people is increased[1].

U-Healthcare, Ubiquitous-Healthcare which is grafted medical information with communication technology, means healthy and medical services that the patients can prevent illness, have treatment and health care whenever they need[2]. U-Healthcare is classified according to the characteristics of the services to the Healthcare and Wellness. It has written Healthcare tradition medical treatment or management purposes, and Wellness says the service will be provided for the maintenance and improvement of health. The social interest in wellness has been expanded by the integration of various industrial sectors including the IT sector [2].

Outdoor exercise data was collected based on GPS, accelerometer, gyroscope in the Wellness area of the existing research. Also, there were record research to receive a data using Smartphone sensor regarding specific developments in the user. Somewhat limited in terms of this is may not be available in the indoor sensor and is optimized for specific movement.
This study we designed a customized fitness program that can be entered automatically exercise recording by the acceleration sensors in the Smartphone. First of all, the movement of the user is recorded using the iOS-based mobile sensor. The saved data is sent to the MySQL database server. Server data is to verify your exercise recording via the Web and also can be applied to own exercise programs selected for various user-uploaded in your exercise program.

Paper specifications are as follows. In the second chapter, described the related research, in the third chapter, customized fitness program to design system. Design by utilizing mobile devices and networks makes available to users. In the last chapter is written as a conclusion and future research challenges and tie.

II. RELATED WORK

Studies have been done to take advantage of smart phones in the field of Wellness, or to use the built-in sensor based on maintaining and managing the health of the people [3][4].

In the research [3], smartphone’s GPS, accelerometer, gyro sensor are utilized. The measurement of outdoor walking exercise activities is getting locomotion data based on a variety of sensors. You can monitor the movement based on the data recorded and also determine the proper momentum. It focuses in order to take advantage of the GPS sensor for outdoor use.

In the research [4], it is based on dumbbell curl movement as a part of indoor exercise. This is the research that can measure the repeated motion sensors for smart phones. When the user wears the Smartphone on wrist and repeat the exercise, the rotational movement information will be calculated based on acceleration sensor. You can measure the energy consumption of the user. This research is focused on assisting the movement of specific user called dumbbell curls.

Such existing studies are used various sensors to smart phones to monitor and measure the amount of exercise via GPS sensor which is appropriate only at outdoor than in indoor. Other studies can get data for specific indoor exercises, however, in terms of limited range was limited. In this paper, customized programs will be developed to overcome the existing research which is limited only at the outdoors through the application of its diversity in indoor sports based a sensor built into the Smartphone.

III. DESIGN OF SYSTEM

A. Development goals

The purpose of this research is in actively cope with passing on health maintenance and management in the treatment of problems of the U-Healthcare market. First of all, using accelerometers in smartphones, the data of indoor exercise will be recorded. The exercise program will be recommended from a variety of user based this data or can be selected directly. The overall system configuration < 1 > is like below.
Selection system of fitness program that is customized user utilizing

![System Conceptual diagram](image1)

**Fig. 1.** System Conceptual diagram

**B. The Entire system configuration**

The custom-designed fitness program in this paper is as shown in Figure 2. The acceleration sensor built into the Smartphone collects records of the movements of the user. Evidence collected is primarily stored on Smartphones. In conjunction with the Web, it can be confirmed in the history at anytime and anywhere. To share the athletic programs on a variety of user movement records sent to the Web server and managed. Web server is configured with MySQL. The data is shown to the user via Web services and the exercise program is recommended from a variety of user based on own motion recording. Also the programs by other users can be selected.

![System Structure and process of progress](image2)

**Fig. 2.** System Structure and process of progress

The exercise data based on phone acceleration sensor can be deleted if the user does not want. Also it can be saved in mobile data base without having to send to the Web. When the data is forwarded on the Web, and it is transferred to MySQL server. Users and trainers are directly connected based on this web and share the information about the different types of exercise programs. Finally, users will be able to select the program that suits. Possible that in doing so, it enables to apply.
IV. CONCLUSIONS

Wellness is in service to use to improve and maintain good health rather than using mobile phones and computers for treatment purposes (Healthcare). Also, it is in words referring to mobile-phone-stress-management, data analysis of indoor exercise, obesity management, and U-fitness. Study on how to optimize the movement of users using mobile terminals for these reasons are activated.

In this paper, the customized fitness program is designed using mobile devices and the. First, the users utilizing the sensor in the mobile device gather the exercise data and it will be digitized. The numeric data will be modified into a database, managed on the server using MySQL, and represented by the net. Via the Web, users can monitor own exercise records using mobile devices and computers. Also, the users can directly choose the exercise program presented by various trainers or receive recommendations, and feedback mechanisms will be sent again through the network in.

This should be to explore ways to improve the accuracy to retrieve user's exercise data in the future based on paper. Also, the database that consists of input data needs to be linked to medical equipment.

REFERENCES
