Training project of Data analyst in Medical and Health

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Abstract. With the recent spread of digital devices and wearable devices, digital data in medical facilities is increasing. Analyzing digital chart information can be useful for making administrative improvements. Doctors can also predict illnesses by analyzing health information such as blood pressure. We would like to introduce course of our University as an example. Our goal is to train professionals who give back to administrations and patients by analyzing big data.

1. Introduction

Digital data is increasing rapidly along with the development of sensors and the rise of Society 5.0. This is the rise of the big data society. Big data analysis makes new knowledge and discoveries possible. The big data from digital charts, especially contributes to administrative analysis. Health data obtained from wearable devices also contributes to illness prevention and health promotion [1]. However, we lack analysts who able to analyze big data properly. Many organizations are starting projects to train such analysts. As one of those organizations, qualification system is made [2]. We have started a project in Gunma to train data analysts in the health and medical field. We would like to introduce that project and our vision.

2. Education of Programing

The "Regional IoT Learning Promotion Project" has been adopted in Gunma. Through this project, universities and professionals teach programming to elementary and junior high school students. Data scientists need advanced skills in statistics and programming. Therefore, we are working to give local children the foundation they need to be data scientists. One way we are doing this is with our online classroom, which is called "TechBoost" [3]. With TechBoost, students can learn blockchain and machine learning programming online. We have also established partnerships with local private businesses that are working with us to create our data scientist education content.

3. Security

Because medical and health data is confidential information, security education is also necessary. "enPIT" works with universities to train professionals with the skills that are lacking in Japan [4]. Every year, our university produces health information managers with a 100% pass rate. A health information manager handles a hospital's data analysis and management. Therefore, we participate in enPIT Security to teach our students about security. In the enPIT Security program, students create malicious codes themselves and practice cyber attacks. We will also be participating in enPIT Big
Data/ AI starting next academic year. Figure 1 shows practical training of enPIT security.

4. Health data

The development of sensors and wearable devices has made it possible to obtain health data from the human body. Our project mainly use blood pressure and motion capture as health data. Wearable devices connect to tablet devices, and analyze healthcare data. As we age, our bodies begin to decline in function and we become more susceptible to injury and disease. By analyzing data from healthy people, we can propose correct exercises and ways to prevent injuries [5]. We teach students how to acquire and analyze big data from wearable devices. We are working with our affiliated high school's strongest teams, especially the baseball team, to analyze the athletes' blood pressure and walking data 24 hours a day. We have also created original wearable devices and research ways to use them to acquire and analyze big health data. Figure 2 shows students collecting data with devices they created in the course.
5. Conclusions

Opportunities to use big data will only increase in the future. Using big data appropriately makes new discoveries and business improvements possible. And so we are laying the foundations for this through local programming education. Big data and security are particularly important in the medical field. It is extremely useful to learn about security through hands-on courses with other universities. Acquiring and analyzing big data on health from wearable devices is also useful for injury prevention and rehabilitation. We will continue to train data scientists through these educational activities.

References


