5G-Smart Diabetes: Toward Personalized Diabetes Diagnosis with Healthcare Big Data Clouds

Abstract

Recent advances in wireless networking and big data technologies, such as 5G networks, medical big data analytics, and the Internet of Things, along with recent developments in wearable computing and artificial intelligence, are enabling the development and implementation of innovative diabetes monitoring systems and applications. Due to the life-long and systematic harm suffered by diabetes patients, it is critical to design effective methods for the diagnosis and treatment of diabetes. Based on our comprehensive investigation, this article classifies those methods into Diabetes 1.0 and Diabetes 2.0, which exhibit deficiencies in terms of networking and intelligence. Thus, our goal is to design a sustainable, cost-effective, and intelligent diabetes diagnosis solution with personalized treatment.

In this article, we first propose the 5G-Smart Diabetes system, which combines the state-of-the-art technologies such as wearable 2.0, machine learning, and big data to generate comprehensive sensing and analysis for patients suffering from diabetes. Then we present the data sharing mechanism and personalized data analysis model for 5G-Smart Diabetes. Finally, we build a 5G-Smart Diabetes testbed that includes smart clothing, smartphone, and big data clouds. The experimental results show that our system can effectively provide personalized diagnosis and treatment suggestions to patients.

Conclusion

In this article, we first propose a 5G-Smart Diabetes system that includes a sensing layer, a personalized diagnosis layer, and a data sharing layer. Compared to Diabetes 1.0 and Diabetes 2.0, this system can achieve sustainable, cost-effective, and intelligence diabetes diagnosis. Then we propose a highly cost-efficient data sharing mechanism in social space and data space. In addition, using machine
learning methods, we present a personalized data analysis model for 5G-Smart Diabetes. Finally, based on the smart clothing, smartphone and data center, we build a 5G-Smart Diabetes testbed. The experimental results show that our system can provide personalized diagnosis and treatment suggestions to patients.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 512 Mb.

**SOFTWARE REQUIREMENTS:**

- Operating system : Windows 7/UBUNTU.
- Coding Language : Java 1.7, Hadoop 0.8.1
- IDE : Eclipse
- Database : MYSQL

**Reference**
