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Data Mining Technologies for Blood Glucose and Diabetes Management

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Abstract

Data mining is the process of selecting, exploring, and modeling large amounts of data to discover unknown patterns or relationships useful to the data analyst. This article describes applications of data mining for the analysis of blood glucose and diabetes mellitus data. The diabetes management context is particularly well suited to a data mining approach. The availability of electronic health records and monitoring facilities, including telemedicine programs, is leading to accumulating huge data sets that are accessible to physicians, practitioners, and health care decision makers. Moreover, because diabetes is a lifelong disease, even data available for an individual patient may be massive and difficult to interpret. Finally, the capability of interpreting blood glucose readings is important not only in diabetes monitoring but also when monitoring patients in intensive care units. This article describes and illustrates work that has been carried out in our institutions in two areas in which data mining has a significant potential utility to researchers and clinical practitioners: analysis of (i) blood glucose home monitoring data of diabetes mellitus patients and (ii) blood glucose monitoring data from hospitalized intensive care unit patients.

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Abbreviations: (BG) blood glucose, (BGL) blood glucose level, (DM) diabetes mellitus, (ICU) intensive care unit, (IIT) insulin-intensive therapy, (PRIM) patient rule induction method, (TA) temporal abstraction

Keywords: blood glucose management, diabetes mellitus, data analysis, data mining

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