

An e-Health Framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics

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Abstract

With advances in radio-frequency identification (RFID) technology, sensor networks, database systems and networking technologies, a huge volume of health data is now electronically accessible via the Web, even from remote corners of the world. The health industry is deluged by data – there are 5.7 million hospital admissions, 210 million doctor's visits, and hundreds of millions of medicines dispensed in Australia annually – which is both an opportunity and a challenge. And health care and medical service is becoming more data-intensive and evidence-based since electronic health records are used to track individuals' and communities' health information (particularly on changes). Medical professionals' time has become the most precious resource. We must find ways to effectively integrate and process health data, to automatically classify, summarise, discover and characterise relevant trends and to automatically flag anomalies. These substantially motivate and advance the emergence and the progress of data-centric health data and knowledge management research and practice, for example, Health Informatics.

In this talk, we will introduce an e-health framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics, and several case studies and research projects to address the challenges encountered in health service. The overall aim of this research is to develop a smarter, collaborative and adaptive health information service approach based on whole-of-life health service, pervasive data processing and data mining technology to promote e-health care. It will increase the speed, rigor and adaptability of decisions made by patients and medical professionals by focusing on services that will improve the identification and quality, integration and accessibility, relevance and interpretability of medical data.