

## GUEST EDITORIAL PREFACE

# Special Issue of Selected Papers from ICEH 2012

*Payam Hanafizadeh, Allameh Tabataba'i University, Tehran, Iran*

Following several national conferences on e-health and close areas such as telemedicine and medical engineering in Iran, the International Conference on Electronic Health (ICEH), Tehran, Iran, Nov 29-30, 2012, is the first international conference in Iran which specifically sheds light on the issue of electronic health. This issue of the International Journal of Healthcare Information System and Informatics integrates the adapted and enhanced versions of six papers selected from among 240 papers submitted to ICEH 2012. 30 percent of submitted papers were accepted for either oral or poster presentation. More specifically, 47 oral presentations and 30 poster presentations were selected by our scientific committee which is made up of 21 prominent academic figures in cooperation with 150 experts and specialists. From the very beginning, the conference committee was focused on creating an atmosphere inspired by innovative and diverse nature of topics on electronic health.

## INSIDE THIS ISSUE

This special issue includes six contributions to the discussion of the main issues, challenges, opportunities and developments related to advances in health and medical informatics.

In the first paper, *Medical Robotics: State-of-the-Art Applications and Research Challenges*, Mirbagheri, Arab Baniassad, Farahmand, Behzadipour, and Ahmadian presented an overview of selected state-of-the-art applications of robotic technology in medicine. In the medical robotics lab of the Research Center of Biomedical Technology and Robotics (RCBTR), they worked on a variety of research projects in different fields of medical robotics, in partnership with several clinics and medical centers. A wide range of clinical problems were identified and appropriate technologies were pursued, mainly in the four key areas of image-guided surgery, virtual reality in medicine, surgical robots, and robotic rehabilitation

systems. This article provides an overview of the applications of robotics in medicine, with emphasis on the projects performed and experiences gained by their team in this field.

In *A Content-based Approach to Medical Images Retrieval*, Tarjoman, Fatemizadeh and Badie proposed a CBIR system based on Adaptive Neuro-fuzzy Inference System (ANFIS) learning which could classify an image as normal and tumoral. This research uses the knowledge of CBIR approach to the application of medical decision support and discrimination between the normal and abnormal medical images based on features. The experimental results indicate that the proposed method is reliable and has high image retrieval efficiency.

One of the main challenges in the development and implementation of computerized health care systems is the physicians and nurses' resistance, stemming in particular from the use of text-based environments for capturing their medical examination data. The purpose of the study conducted by Jahedi, Maghsoudloo, and Amirchakmaghi entitled *A Novel Graphic-Oriented Framework for Capturing Data Within Clinical Information Systems*, is to propose a graphic-oriented framework which can be used to capture data for a medical examination which would facilitate data-entry by keyboard. Following analysis of a classical general medical examination, an XML schema was designed to describe physical examinations. Based on the physical examination XML schema, XML data structures are transformed to HTML using XML transformation style sheets to create dynamic graphical user interface (GUI) widgets; user interactions with the widgets lead to the generation of sentences.

In *Proposing a Business Model in Healthcare Industry: E-Diagnosis*, Hajiheydari, Khakbaz and Farhadi proposed a new business model for solving some critical issues patients confronted. E-diagnosis is the name of their elaborated business model, which can propose three categories of values including (1) strategic values, (2) healthcare system values, and (3) micro end users values. They proposed these values to patients, healthcare governance sys-

tem, hospital urgent, medicine companies and health experts. Patients can be satisfied with web site diagnosis, web based applications and reports generated by e-diagnosis. The authors' main contribution is to introduce a new potential opportunity to the market, and consequently to proposed a variety of values to different range of beneficiaries. Their idea can be deployed by practitioners and/or government for making income as well as helping the society and healthcare industry.

S. Sadr, M. H. Sadr, and Gudarzi Farahani's research entitled *Implication of E-health and IT Governance on Healthcare Expenditure: An Econometrics Approach (Case Study Middle East Countries)*, analyzes the public healthcare expenditure of Middle Eastern countries in relation to different exogenous explanatory variables, through a panel study involving twelve (12) Middle Eastern countries. More specifically, the study utilizes panel co-integration, and panel-based error correction models derived from annual data covering the period of 2000 to 2010. The empirical results support a short-run co-integration relationship after allowing for the heterogeneous country effect. The long-run relationship is estimated using a full-modified OLS. The results of a ten-year panel study have been interpreted and commented on. The public healthcare expenditure of these countries is explicated to a great extent by the single country GDP. Other strong correlation variables were also found to be statistically significant. Their research reveals that e-health programming and e-health governance could lead to a decrease in unnecessary health care expenditure. It is very important for the countries to adopt appropriate health and fiscal policy in order to promote e-health, e-health governance and e-government programming. Since Iran has a high expenditure in health care and treatment, efficient use of electronic records and technology may benefit Iranian households.

Creating the appropriate conditions for inducing innovation is essential to create novel and advanced treatment and illness prevention methods. In *The Business Values of Patient Knowledge Management*, Soltani Delgosha,

Amoei Ojaki, and Farhadi develop the conceptual model of patient knowledge management (PKM) based on patient-centered care and customer knowledge management approaches in the healthcare industry. Their proposed model is divided into five levels: categories of patient knowledge; components of patient knowledge; PKM process; PKM tools; and Functions of PKM. Based on this model, PKM is defined as a collection of processes, which helps patients to participate in the procedure of decision making in treatment and handling. Also it can aim healthcare providers to identify, capture, analyze, share and exploit data and information of patients. The purpose of presenting PKM is to merge the capabilities of CKM and PCC approaches in healthcare industry.

mention must be made of our keynote speakers Professor Joseph Tan from McMaster University, Canada who provides me with the opportunity to edit this special issue of IJHISI and Dr. Najeeb Al-Shorbaji a representative from World Health Organization. I would also like to thank the representatives from the United Nations University, Professor Syed Mohamed Aljunid and Dr. Nurhizam Safie and offer my special thanks to Professor Ali Reza Montazemi from McMaster University, Canada and Mr. Reza Shahpori from Department of Critical Care Medicine Informatics, Alberta Critical Care Clinical Network, Calgary, Alberta, Canada. Finally, I would like to express my appreciation and gratitude to the authors for their excellent contributions to this special issue.

## ACKNOWLEDGMENT

At the end, I would like to offer my sincere gratitude to the members of the conference committee and the dedicated staff who have helped shape this terrific conference. Special

*Payam Hanafizadeh*  
*Guest Editor*  
*IJHISI*