

# Introduction to the Second Knowledge Representation for Healthcare Workshop (KR4HC2010)

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This book contains the extended version of the best papers of the second Workshop on Knowledge Representation for Health Care (KR4HC-2010). This workshop was held in conjunction with the 19th European Conference in Artificial Intelligence (ECAI2010) at Lisbon, Portugal.

As computerized health-care support systems are rapidly becoming more knowledge intensive, the representation of medical knowledge in a form that enables reasoning is growing in relevance and taking a more central role in the area of Medical Informatics. In order to achieve a successful decision-support and knowledge management approach to medical knowledge representation, the scientific community has to provide efficient representations, technologies, and tools to integrate all the important elements that health care providers work with: electronic health records and health-care information systems, clinical practice guidelines and standardized medical technologies, codification standards, etc.

The KR4HC workshop is meant to bring together researchers from different domains with the aim of contributing to computerized health-care support systems. It is interesting to see that researchers from the computer-science domain, who specialize in natural language processing (NLP) are joining the community. There is an interest from both sides: the medical informatics oriented researchers use NLP techniques for identifying structure in guidelines and the NLP researchers from the computer-science domain are utilizing their tools in the medical domain.

The theme of the second KR4HC workshop was “electronic patient data”. After many years of promise, we finally begin to see a widespread deployment of electronic patient records and dossiers. A large number of papers have indeed a connection to patient data. One of the other central topics examined during the workshop include *ontologies* used for several reasoning tasks (like retrospective and prospective diagnosis, medical knowledge personalization, knowledge alignment for clinical pathways, knowledge integration from several sources). Another topic of focus concerns procedural knowledge for medical *processes* and clinical *guidelines*. The interaction between patient data and guidelines is a hot topic.

This book presents eleven selected and extended papers out of nineteen submissions of the KR4HC’10 workshop. All extended papers got a second review round.

Some words about the history of the KR4HC workshops. The KR4HC workshop continued a line of successful guideline workshops held in 2000, 2004, 2006, 2007, 2008, and 2009. Following the success of the first European Workshop on Computerized Guidelines and Protocols held at Leipzig, Germany, in 2000, the Symposium on Computerized Guidelines and Protocols (CGP-2004) was organized in Prague, Czech Republic in 2004. In 2006 an

ECAI-2006 workshop at Riva del Garda, Italy, entitled “AI Techniques in Health Care: Evidence-based Guidelines and Protocols” was organized to bring together researchers from different branches of Artificial Intelligence. This ECAI-2006 workshop continued with a workshop on “Computer-based Clinical Guidelines and Protocols (CCG’08)” at the Lorentz Centre of Leiden University at the beginning of 2008, which resulted in the book “Computer-based Clinical Guidelines and Protocols: a Primer and Current Trends” edited by Annette ten Teije, Silvia Miksch, and Peter Lucas and published by IOS Press in 2008.

Running in parallel to the previous ones, there were a series of workshops and publications devoted to the formalization, organization, and deployment of procedural knowledge in health care. These previous workshops and publications are the IEEE CBMS-2007 special track on “Machine Learning and Management of Health Care Procedural Knowledge” held in Maribor, Slovenia in 2007; the AIME-2007 workshop entitled “From Medical Knowledge to Global Health Care” in Amsterdam, The Netherlands, in 2007; the ECAI-2008 workshop on “Knowledge Management for Health Care Procedures” in Patras, Greece, in 2008, and the Springer Lecture Notes Series books LNAI 4924 and LNAI 5626, both edited by David Riaño in 2008 and 2009, respectively.

These initiatives joined in the first KR4HC workshop that was organized in conjunction with the AIME conference in Verona, Italy, in 2009, and this second KR4HC workshop that was organized in conjunction with ECAI conference in Lisbon, Portugal, in 2010.

Thanks should go to the people who contributed to the KR4HC-2010 workshop: the authors of the submitted papers, the participants of the workshop, the members of the Organizing Committee, the members of the Program Committee and the sponsoring institutions.

We aim to organize KR4HC each year in conjunction with a Medical Informatics or Artificial Intelligence conference in order to offer a stable platform for the interaction of the community on Knowledge Representation for Health Care.

October, 2010

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