

Semantic Representation of Patient Triage Data Collected in Emergency Departments

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Abstract. Emergency Department (ED) overcrowding is a major issue for the efficient management of patients. To this end, triage algorithms have been developed to support the task of patient prioritization. In this paper an ontology was designed to represent the knowledge about patient triage procedure in EDs.

Keywords. Medical ontology, Emergency Department, Triage

1. Introduction

Triage is one of the fundamental processes in Emergency Departments (EDs) in order to prioritize individuals requiring urgent medical intervention. It is a complex decision-making process performed by the nursing staff based on patient's demographics, chief complaint, and vital signs. Several studies tried to tackle patient triaging in EDs using ontology-based systems, e.g. the OntoUrgences ontology [1]. This work focuses on the representation of the knowledge regarding patient triage procedure in the IntelTriage project [2]. To our knowledge, this is the first attempt to semantically model ED triage.

2. Methodology and Results

To design the ontology the collaborative approach was chosen [3]. The top-class *Patient* represents each patient incident. Information is divided into a set of five classes. Class *Triage* represents information related to the screening procedure. Class *Medical* represents patient's medical and social history. *WaitingTime* class represents the waiting time in different ED departments. *Vitals* class including subclasses *HeartRate* and *OxygenSaturation* represent heart rate (HR) and oxygen saturation (SpO₂) measurements collected for each patient. Finally, patients' experienced symptoms are represented with the use of the *Symptom* class. The five classes, their subclasses and all the needed variables are presented in Fig1. In the context of semantic interoperability, an attempt was made to interconnect ontology's variables with common data models and other ontologies (SNOMED CT healthcare terminology [4], International Classification

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of Primary Care (ICPC-2) [5]) that refer to the same field of interest. Following this process, the developed ontology is standardized, reusable and easy to interconnect.

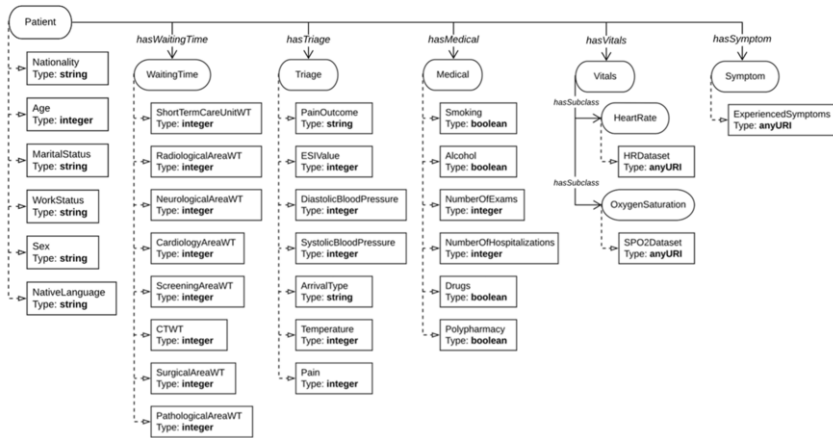


Figure 1. Ontology design.

3. Conclusions

The ontology presented in this paper is an effort to represent and share common understanding of the patient triage procedure in ED. Future steps include ontology validation and addition of real-life data to act as a data repository for ED incidents.

Acknowledgments

IntelTriage has been co-financed by the European Regional Development Fund of the EU and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call Research-Create-Innovate (No. T1EDK-02489).

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