

Delivering Deep Health Information Using Clinical Eye

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ABSTRACT

This paper introduces a web-based semantic tool that provides more detailed information about a term selected by the user of a web browser, the Clinical Eye. This tool was initially designed for the medical area of cardiology, which is still controversial in terms of vocabularies. Anontology has been developed as a reference base where those different vocabularies converge. The information supplied by the tool was taken from specialized medical web pages and technical documents. It is a tool of low interference for ongoing activities, so it can be used during a clinical activity. It has been designed according to requirements raised by studies in various medical communities, which pointed the use of Internet during consultations and medical needs for deep information.

Keywords: Augmented Browsing, Controlled Vocabulary, Medical Information Tools, Medical Standard Vocabularies, Medical Terminologies, Ontology, User Interface Issues, Web Browser Plugins

INTRODUCTION

The wide availability of the internet allows the access to several medical documents as well as web-based software with medical focus. The advances in medical technology seem to go beyond the capacity of the human mind to absorb, understand and keep all these changes. The health domain in general, faces a stiff competition for the attention presented by the varied and more complex scientific options, coupled with a large volume of information (Mather, 2011).

The patient's clinical evaluation is a critical process for establishing the diagnosis. In this scenario, tools that offer quick help and support to the health care professional when

searching for specific information rather than relying on his/her memory, become important allies in the clinic.

On the internet, there are several references which help physicians remember the definition of a term, or clear up doubts during the consultation; help the analysis of a patient's electronic medical record; or link to a clinical guideline. But when a physician uses a search engine it usually returns thousands of documents, and it is up to the doctor to filter and determine which item has the desired quality, and only then verify the objectivity of the selected information (Bernard, 2012).

A tool that offers the necessary support for quick-viewing the definition of a term, and recommends useful references in real-time,

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improves the physician's comprehension and self-assurance on a particular subject. Also, all physicians at same specialty should have the same consistent information even if they use different terms to the same disease.

In recent years, medical research has contributed to a noticeable increase in the amount of new terms which resulted in a vast complex lexicon, thus causing ambiguities (Costa, 2011). The need to have a control over these terms, resulted in mapping them in dictionaries, taxonomies, meta-thesaurus, and ontologies, among others.

Positioning precise information using this classification for the area of cardiology has been the motivation for this study. Cardiovascular diseases are the main causes of death in both rich and poor countries, having become a global epidemic and it is estimate to take precedence over cancer and infectious diseases until 2025 (Tecce, 2011).

The medical terminologies of the World Health Organization's International Classification of Diseases, 10th edition - ICD-10 (WHO Library, 2010), the Systematized Nomenclature of Medicine -Clinical Terms –SNOMED CT (SNOMED CT, 2013), a collaborative corpus of medical terms edited by volunteers worldwide – Medpedia (Rethlefsen, 2009), and the taxonomy of Diagnoses prepared by

the Multi-Societal Database Committee for Pediatric and Congenital Heart Disease - defined in (The multi-societal database committee for pediatric and congenital heart disease, 2008), were used in order to minimize incorrectness and incoherencies (Figure 1).

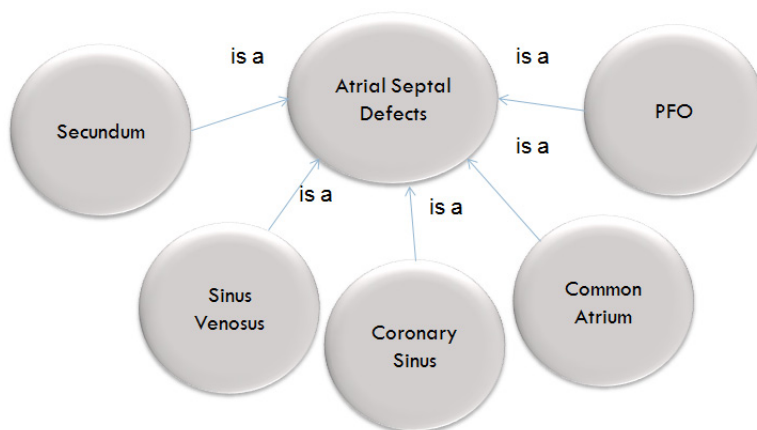
This work has been organized as follows: Related Work deals with tools that possess similar characteristics. The Medical Terminologies section presents a comparison among varied terminology. Clinical Eye section displays the build methodology of the Clinical Eye tool. And finally, Concluding remarks lists the final observations and forthcoming works.

RELATED WORK

Tools that can automatically increase or improve the information on a web page are called, because they deepen their viewing and understanding (Bowen & Filipini-Fantoni, 2004). A common example is the popup showing the definition of technical terms as the user reads the page.

Reflect (O'Donoghue, 2010), the inspiration tool for this work, allows the user to do page tagging based on a pre-established dictionary of chemical terms. In other words, the tool selects all terms that are contained in

Figure 1. The sub-tree for Atrial Septal Defects from the taxonomy defined in (The multi-societal database committee for pediatric and congenital heart disease, 2008)



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