Chapter 1.16
Literature Review in Computational Linguistics Issues in the Developing Field of Consumer Informatics:
Finding the Right Information for Consumer's Health Information Need

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ABSTRACT

With the increased use of Internet, a large number of consumers first consult on line resources for their healthcare decisions. The problem of the existing information structure primarily lies in the fact that the vocabulary used in consumer queries is intrinsically different from the vocabulary represented in medical literature. Consequently, the medical information retrieval often provides poor search results. Since consumers make medical decisions based on the search results, building an effective information retrieval system becomes an essential issue. By reviewing the foundational concepts and application components of medical information retrieval, this paper will contribute to a body of research that seeks appropriate answers to a question like "How can we design a medical information retrieval system that can satisfy consumer's information needs?"

INTRODUCTION

The Internet functions as a family physician as more and more people seek medical information on line and make subsequent healthcare decisions based on the acquired medical information. Consequently, one of the perspectives in biomedical informatics defended by the statistics of (1) significant increase in the prevalence of Internet, (2) increased concern of healthcare among general population, and (3) sheer growth in the number of medical literature available in public concentrates on the use of bio-

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medical information by consumers. Denoted as consumer informatics, this emerging perspective focuses on the consumer's information need, access to the information, and modeling their information need for system integration (Haux, 1997; Lange, 1996; Logana & Tse, 2007; Nelson & Ball, 2004; Soergel, Tse, & Slaughter, 2004; Warner, 1995). However, simple statistics does not secure it as a robust academic discipline since the significance of healthcare information is rather determined by what's in the information and how the information can be used in addition to how users acquire the information. The core problem, in addressing this matter, is the discrepancy between user vocabulary, used by a "lay person", and professional vocabulary used by clinical professionals. While consumers search medical information on the Internet using their everyday terms, medical literature on the Internet is represented in professional terms. Consequently, key words in consumers' queries do not match the medical key words in medical documents (or match the wrong ones). This can cause a significant problem since misinformed healthcare decision is directly related to consumer's health issues. In the field of consumer informatics, therefore, a trend of research has burgeoned in designing the map that can translate (in effect "mapping" one vocabulary to another) consumer vocabulary to professional vocabulary.

The objective of this paper is to discuss concepts of consumer health vocabulary and review research endeavors to reduce the gap between consumer vocabulary and professional vocabulary. Primarily, it aims at examining current methodological approaches to map consumer vocabulary to professional vocabulary, critically reviewing them, and suggesting expanded perspective. With this literature review, researchers in the field of consumer informatics will be able to set a basis for further exploration of healthcare information system design. In addition, concepts and methods regarding vocabulary mapping reviewed here will provide the researchers with critical viewpoints to approach methodological problems and help them identify and gain insights into the system design to reduce discrepancy between consumer information need and medical domain knowledge.

The rest of the paper is structured as follows: Background concept section discusses conceptual background of consumer healthcare vocabulary and how it can be explored and developed to better facilitate links between consumer information needs and medical domain knowledge. In related work section, research studies that contribute to practical solutions of mapping consumer terms to professional terms are reviewed and analyzed. In discussion section, along with critiques for current studies, different perspectives to approach the problem are discussed. The discussion includes a brief review of semantic approach to design consumer vocabulary. Lastly, conclusion section concludes this paper.

BACKGROUND CONCEPT: CONSUMER VOCABULARY

In this section, the concept of consumer health vocabulary is discussed. The definition of consumer health vocabulary, current issues of consumer health vocabulary, and the problems of consumer health vocabulary in regards to information retrieval system are main topics of discussion in this section.

Consumer health vocabulary is a set of terms that is used by the general population when they refer to specific healthcare information needs. In a more practical sense, Zeng and Tse (2006) conceptualize it as a "combination of everyday language, technical terms (with or without knowledge of the underlying concepts), and various explanatory models, all influenced by psychosocial and cultural variations, in discourses about health topics" (p. 24). This definition implies a few major points in understanding the concept of consumer health vocabulary. First, there is a gap between consumer vocabulary and technical