

Chapter 8

Evidential Learning on Web Search Queries Disambiguation for Active Strategic Decision Making

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ABSTRACT

The web search engines are perhaps the most significant of all software systems. True, the vast information needs of the users would not satisfy without a way to represent the data and provide the interface components. The fast growth of the information world and the internet saturation into all fields has increased the importance of the problem of information access. In pursuance of communication being made with a web search system, the user must express his or her needs in the form of queries. However, due to the lack of domain knowledge and the limitation of natural language such as synonym and polysemy, many system users cannot formulate their needs into effective queries. In this chapter, the authors attempt to give detailed description of ambiguity concept, search queries, and then disambiguation process with respect to different types. Disambiguating the search intent and improving the accuracy of resulting information is a crucial issue in the domain of web search systems, especially when most of users are unable to clearly express their information needs.

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INTRODUCTION

The process of searching a particular document or set of the documents related with the specific category needs a user query to be input, using the search engines in the computing environment. In most of the cases, a user looks for the documents related to the specific topic, so he/she needs to write a query accordingly. Hence, these queries require greater attention to be interrelated with the documents that need to be retrieved. For example, a query consists of keywords, captions, or some other data string; that may be considered as separate or in combination connected with specific category. These categories are used to identify the information requirements described by the query in Bennet et al. (2014).

The ambiguity can be defined as “A lack of clear and exact use of words, so that more than meaning is possible” (MacMillan Dictionary, 2018). The ambiguity problem can be of two types with different sub types (Ballesteros & Croft, 1998), which are given below.

- Within-language (WIL) Ambiguity
- Between-Language Ambiguity

1. Within-Language Ambiguity

Within-language (WIL) ambiguity deals with the identification of particular linguistic item meanings. For example, a word, phrase or sentence. When there more than one interpretation are associated with a word, or sentence then it can be said as ambiguous. The ambiguous word understanding has gained popularity in the domain of monolingual studies. To resolve this type of problem, focus is concentrated on the individual word senses in order to disambiguate it. There are three types of models used for resolving the word ambiguity namely; context dependent, exhaustive access and ordered access models. These models assume that those ambiguous words meanings can be accessed by contextually or by every meaning regardless of context or by sequentially based on frequent existence respectively (Simpson & Kang, 1994).

2. Between-Language Ambiguity

The between-language (BL) ambiguity addresses the issues associated with the translation of a linguistic item from one language to another. This type of ambiguity arises when users try to translate text given in one language to another language while maintaining the essence of the original text. It has been concluded in previous studies, for example bilingual visual word recognition, that bilinguals are incapable

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