An Exploratory Analysis on Unsuccessful Image Searches

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ABSTRACT
As a way of understanding users’ information needs for image, this study aims to explore unsuccessful image search questions in context of a social Q&A service. To achieve this purpose, 41 unsuccessful image seeking questions in Yahoo!Answers were explored. 41 questions for image were analyzed in terms of information needs types and image attributes. The findings of this preliminary study show that information needs types are primarily recognized in the Specific and General/Nameable categories with approximately 50%, respectively. More importantly, these information needs are interlaced with multiple image attributes including bibliographic information, quality of image in non-visual feature and image attributes in interpretive category.

Keywords
image, information needs, failed search, social Q&A

INTRODUCTION
Considerable research has been conducted to understand users’ image information needs through a variety of analysis including investigation on search queries, indexing terms, and image descriptions in the context of diverse ranges of image collections. In this sense, this study aims to understand users’ information needs for image. However, the focal point of this study attempts to understand information needs from unsuccessful image seeking questions posted in a social Q&A service. By viewing unsuccessful questions, this study aims to reveal the characteristics of information needs which have been invisible in such analyses as search queries, indexing terms and descriptions. This study explores two folds: 1) what types of information needs in unsuccessful image search questions exist, and 2) what characteristics of image attributes are interrelated in unsuccessful search questions. The findings of this study may guide indexing practices and design issues of image retrieval systems or search engines.

RELATED STUDIES
Image information needs and search behavior studies have been conducted in various contexts depending on collections and types of users. Several studies have investigated users’ queries for image to understand image

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ASIST 2010, October 22–27, 2010, Pittsburgh, PA, USA.

unsuccessful questions, indexing terms, and image attributes. Image attributes

RESEARCH METHOD
Data Set
The data were collected from the Yahoo! Answers.com, a social Q&A service provided by Yahoo! During the period from December 6 2009 to December 20 2009, questions were initially collected using keywords ‘photo’, ‘photograph’, ‘picture’, and ‘image’ using a Boolean OR operator. From the data collection period, there were approximately 9,000 questions. After reviewing those 9,000 questions, a total of 474 questions were finally identified as image seeking questions. For the analysis of this study, 41 questions out of 474 questions were selected as unsuccessful image search questions based on users’ comments (e.g., ‘I’ve been looking for images which are... but couldn’t find anywhere, google, flickr, photobucket, etc.)

Data Analysis
In order to analyze the data set, image information needs are classified by existing categorization tools. In fact, categorization tools for image information needs and search behavior have been developed, modified and applied in several studies (Shatford, 1986; Batley, 1988; Jörgensen, 2001; Jansen, 2008). For this study, four categories for image information types (Batley, 1988) were adopted to analyze users’ information needs for image: Specific, General/Nameable, General/Abstract, and General/Subjective information types. The characteristics of image information needs are examined in terms of image attributes. Image attributes are classified into three sets of revised features from Jörgensen (2001) and Westman (2009): non-visual, perceptual, and interpretive.
FINDINGS OF PRELIMINARY STUDY

For 41 image search questions, overall distribution by Batley (1988)’s four visual information types are found in terms of Specific, General/Nameable, General/Abstract, and General/Subjective. Two primary information needs for image are found as the Specific (20 out of 41 questions) and General/Nameable categories (19 out of 41 questions), while information needs in General/Abstract and General/Subjective categories occurred just once, respectively. This overall distribution is similar to the findings of Pu (2008)’s results. For more detailed image feature analysis according to the type of image information needs, the Specific and General/Nameable information needs are discussed as follows.

Specific Information Needs for Image

When users seek images from specific image information needs, there are two distinctive characteristics found: highly specific in perceptual feature and interlinked with multiple attributes in non-visual and perceptual features. First, specific information needs for image are expressed specifically in details when describing person, event, object, and scene. For instance, an image search question is articulated in terms of specific object (Abingdon's 'Iron Bridge') and specific location (the bridge that crosses a stretch of river as you go from St Helen's Church, East St Helen's Street, eventually to Caldecott Road) with a great deal of specific details. Second, specific information needs are mostly interwoven with multiple attributes. Two major features of image attributes are found as non-visual and perceptual features. Second, specific information needs for image are interlinked with non-visual feature such as bibliographic information (e.g., creator) which is similar to the result of Cunningham, Bainbridge, and Masoodian (2004) and physical quality of image (e.g., high resolution).

General/Nameable Information Needs for Image

The characteristics of the General/Nameable image information needs are very similar to the ones of the Specific information needs. First, interestingly, although image searching questions are categorized as the General/Nameable information needs, those questions describe things in specific details in terms of perceptual feature. For instance, an image search question looks for nameable objects (doves), but it is expressed in conjunction with a great deal of specificity (the dove on the very top was complete, as you got down to ss the bottom one, it was just part of the head & chest). Second, for non-visual feature, while image searching questions are related to nameable objects (cottage house during Christmas time), the good quality (high quality for print) based on the user’s use purpose of image is sought as well.

DISCUSSION AND CONCLUSION

To understand users’ information needs for image, this preliminary study explores unsuccessful image seeking questions in the context of a social Q&A service. Two main characteristics are found from unsuccessful questions. First, the specificity is considerably expressed in both types of information needs. One of primary reasons for specificity can be explained as users tend to seek images based on users’ previous experiences or recall. Accordingly, those questions contain a great deal of specific and fine details. Second, the multiplicity is one of distinguished features. For instance, creator and physical quality of non-visual features are often sought by users with corresponding types of information needs. The findings of this preliminary study suggest that image retrieval systems may be improved by utilizing associated information in order to provide proper level of specificity and multiplicity of image searching.

REFERENCES


