

CompUX_{LSA}: A Computational Model in Predicting User Experience from Reviews using Latent Semantic Analysis

Wendy Tan Wei Syn

Faculty Computer Science and Information Technology
Universiti Malaysia Sarawak
Sarawak, Malaysia
wendytws@siswa.unimas.my

Bong Chih How

Faculty Computer Science and Information Technology
Universiti Malaysia Sarawak
Sarawak, Malaysia
chbong@fit.unimas.my

In this paper, we proposed a novel method (CompUX_{LSA}) to predict user experience from reviews sentences using Latent Semantic Analysis (LSA). Human uses words to represent or express thoughts. The “word of mouth” could influence others especially through web and social media, which are the common communication tools today. We believe that reviews can be categorized according to user experiences since reviews are the thoughts and opinions from users after they have used certain products. In our works, we intend to mine and predict the user experience of expressed through reviews according to the five behavioral variables: Perceived Ease of Use, Perceived Usefulness, Affects towards Technology, Social Influence and Trust. We apply the state of the art method: Latent Semantic Analysis to build a semantic space and map review sentences to the most similar variable measurement items that adapted from Human Behavior Project to predict their experiences. Besides that, we also proposed a rule based template, SubEx to extract features of subject-experience from reviews to enhance the performance. Based on the results obtained, CompUX_{LSA} had achieved average F-measure of 0.24.

Keywords—Latent Semantic Analysis; opinion mining; user experience

I. INTRODUCTION

Nielson Norman [1] defined user experience as “all aspects of the end-user’s interaction with the company, its services, and its products” [1]. The polarity of services and products not only depend on the features, but also the interaction between the end user. Therefore, experience from user that had used the product is crucial for potential customers and the product’s company itself. One of the alternatives to know the experience of user is through online platform such as Amazon.com, Epinion.com and others.

It is easier nowadays for a person to obtain information regarding a product from the Internet, at the same time they also can share their opinion through online reviews. According to Chattejee [2], who researched on word of mouth (WOM) found out that virtual communities with active members used online platforms to share their opinions and experiences on products. This is particular true especially for dissatisfied customers. Online reviews can also help in decision making

because ones most likely will take other’s experience into consideration before purchasing a product. According to eMarketer report (2008) pointed out by Elwada and Lu [3], 61% of consumers read online reviews and various form of customer feedback before they made a purchase.

Currently, the majority of opinion mining methods are focusing on detecting polarity sentiments and extracting features from the reviews. Sentiment polarity itself does not reveal user experiences as it is similar to ratings (good or bad). While features could lead to good or bad experience but prior to subjectivity due to different personal preferences. To our best knowledge, currently there are no works in automatically predicting user experiences from reviews with comply to psychometric measurement. We think that readers are more interested to know the experience that gained from the user after used certain products instead of just knowing it is good/bad or their aspects/features. For example, by interpreting a phone is good through review analysis can be not detailed because reader would not know what are the reasons that caused the writer think the phone was good. In another way, by telling the reader, someone think the phone is useful or easy to use from the reviews would be more informative. In real life, people able to read the reviews and interpret the user experience themselves, however, it would be time consuming when dealing with hundreds of reviews. There is a need in helping people to understand the growing number of reviews at the fingertips.

In this paper, we proposed a computational approach known as CompUX_{LSA} to automatically predict the user experience from online user reviews using Latent Semantic Analysis (LSA) by Deerwester et al. [4]. Additionally, we perform information extraction method (SubEx) by using set of rules to extract subject-experience features from the reviews because we intended to know the experience in the sentence instead of other components. We will focus on five main user experiences: Perceived Ease of Use (PEU), Perceived Usefulness (PU), and Affects towards Technology (AT), Social Influence (SI) and Trust (TR). These user experiences are also part of the study from the work of Elwada and Lu [3] in investigating the impact of online reviews on