Chapter 5
Psychological Profiles Prediction Using Online Social Network Behavior Data

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ABSTRACT

As today's online social network (OSN) has become a part of our daily life, the huge amount of OSN behavior data could be a new data source to detect and understand individual differences, especially on mental aspects. Based on the findings revealing the relationships between personality and online behavior records, the authors tried to extract relevant features from both OSN usage behaviors and OSN textual posts, and trained models by machine learning methods to predict the OSN user's personality. The results showed fairly good predictive accuracy in Chinese OSN. The authors also reviewed the same kind of studies in more pervasive OSNs, focusing on what behavior data are used in predicting psychological profiles and how to use them effectively. It is foreseeable that more types of OSN data could be utilized in recognizing more psychological indices, and the predictive accuracy would be further improved. Meanwhile, the model-predicted psychological profiles are becoming an option of measurements in psychological studies, when the classical methods are not applicable.

INTRODUCTION

The Relationship Between Personality and Online Social Network (OSN) Behaviors: Why Predicting Personality Through OSN Data Is Possible

Besides the innumerable conveniences brought by the internet, the cyberspace also provides us an unprecedented window through which we are able to see the disparity among many millions of individuals. When we mention the difference among individuals, we are usually talking about personality, which is the visible consistent behavior patterns and interpersonal processes originating within the individual (Burger, 2008), as well as the internal distinct traits of cognition and emotion (Mischel, Shoda & Ayduk, 2007). To a great extent, it is the different personalities of internet users which lead to their various, individualized online behaviors.

There have been a lot of studies revealing the correlations between personalities and variety of online behaviors. Baker and Moore (2008) investigated the blogging behavior of Myspace users and reported that the intending bloggers scored higher on psychological distress, self-blame, and venting and scored lower on social integration. Kosinski et al. (2012) found psychologically meaningful relationships between personality and preferences to website and website categories. Psychologists have revealed that the personality characteristics of internet users were relevant to the overall pattern of choosing online services (Hamburger & Ben-Artzi, 2000), as well as the usage of certain functions or aspects of the internet, such as using Wikipedia (Amichai–Hamburger et al., 2008), online dating (Hall, 2010), playing online game (Charlton & Danforth, 2010), and online shopping (Huang & Yang, 2010).

Along with the enormous popularity of Online Social Networks (OSN) in recent years, such as Facebook, Twitter, Instagram and LinkedIn, many researchers put their attention on the OSN behaviors, partly because the OSN services often integrated many functions into a single platform and the use of OSN is bound with personal identity. Series of studies revealing the relationships between the users' personality and their OSN behaviors largely enhanced our knowledge about how online behavior data reflecting personality characteristics. Correa, Hinsley and De Zuniga (2010) found that the Big-Five personality scores could predict the engagement of social media. Gosling et al. (2011) found that the Big-Five personality traits were correlated with both self-reported Facebook-related behaviors and observable profile information, and OSN users extended their offline personalities into the domains of OSNs. Lee, Ahn and Kim (2014) reported that the user's personality may influence several aspects of Facebook usage, including photo uploads, status updates, and number of friends at Facebook Wall, and *Like*, *Comment*, and *Share* at Facebook News Feed. Some other researchers paid attention to the content posted on OSN, and found that

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