ABSTRACT

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Having over 500 million registered users as of 2014 and creating over 500 million tweets per day, Twitter has caught the attention of scientists in various disciplines. As Twitter allows users to send messages with location tags, massive valuable geo-social knowledge is embedded in tweets, which provide useful implications for human geography, urban science, location-based services, targeted advertising, and social network studies. This thesis aims to uncover lifestyle patterns of college students by analyzing the spatial and temporal dynamics in tweets. Geo-tagged tweets over a period of six months are collected for four US Midwest college cites, including West Lafayette, IN (Purdue University), Bloomington, IN (Indiana University), Ann Arbor, MI (University of Michigan) and Columbus, OH (The Ohio State University). First, the overall distribution of tweets for each city is revealed and the spatial pattern of representative individuals is examined. Grouping the tweets in time domain, their temporal patterns at hourly, daily, and monthly scales are examined. Moreover, with the assistance of detailed land use data over the city areas, further insight about thematic properties of tweeting locations are discovered, leading to a deeper understanding about the life, mobility and flow patterns of Twitter users. Finally, the space-time clusters and anomalies within tweets, which are

likely to be events, are found with space-time statistics. The results mostly conform to general human activity pattern. The mobile population in each city is depicted, and people's commute behaviors are uncovered. Also, tweets are proved to reflect the occurrence of anomalies or events. This study demonstrates the promising future of using geo-tagged micro-blogging services such as Twitter in understanding human behavior patterns and other geo-social related studies.