

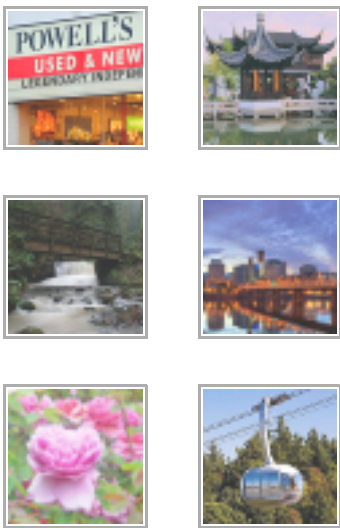


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Abstract View

Big Data and Air Quality: Using Twitter Data for Air Quality Monitoring

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Abstract

Low-cost sensors are increasingly being deployed to widen our air quality monitoring network. Such sensors have conventionally been physical sensors, but here we explore the possibility of using social media data for air quality sensing. Such sensing would be low-cost but not necessarily low in complexity or value. Social media posts represent a real-time public response to a wide range of events, including air quality. Several studies have shown that the number of posts on Weibo, a Chinese social media site, were closely related to air quality levels at corresponding locations in China. Social media data based analysis may allow us to understand the quality of air at locations where monitoring is absent or in locations where air is monitored, social media analysis might allow us to understand public response to air quality. Here, we investigate the ability to use Twitter data to predict air quality and understand public response to air quality events. Accurate model generation first requires identification of an appropriate subset of tweets best related to air quality levels. Using air quality-related tweets for over a duration of year and a bag-of-words representation of tweets, we generated a machine learning based model to predict air quality in different locations around the world. The ability of the generated social media model to predict air quality at locations and time periods different from those used for calibration was then evaluated. We will present our model generation approach and report on the ability the social media models to be used for global predictions. Additionally, we will also discuss how these social media models can provide information about public’s response to air quality that is difficult to obtain otherwise.