Chapter 34

Microblogging During the European Floods 2013:
What Twitter May Contribute in German Emergencies

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ABSTRACT

Social media is becoming more and more important in crisis management. However its analysis by emergency services still bears unaddressed challenges and the majority of studies focus on the use of social media in the USA. In this paper German tweets of the European Flood 2013 are therefore captured and analyzed using descriptive statistics, qualitative data coding, and computational algorithms. The authors' work illustrates that this event provided sufficient German traffic and geo-locations as well as enough original data (not derivative). However, up-to-date Named Entity Recognizer (NER) with German classifier could not recognize German rivers and highways satisfactorily. Furthermore the authors' analysis revealed pragmatic (linguistic) barriers resulting from irony, wordplay, and ambiguity, as well as in retweet-behavior. To ease the analysis of data they suggest a retweet ratio, which is illustrated to be higher with important tweets and may help selecting tweets for mining. The authors argue that existing software has to be adapted and improved for German language characteristics, also to detect markedness, seriousness and truth.

1. INTRODUCTION

The usage of social media enables access to real-time data provided by citizens, the news, organizations and companies. Using Twitter communication during disasters is a major challenge because access to tweets is real-time and short-lived. This requires fast decisions on which information to select. This hid-

den implicit knowledge could add significant value to manage disasters. Many studies during the last decade covered the analysis of social media in disaster management mainly in the USA (starting with Murphy and Jennex (2006) on PeopleFinder and ShelterFinder following Katrina and Palen and Liu (2007), who were anticipating a future of ICT-supported public participation), but only a few case studies about countries such as Germany exist (Reuter et al., 2012). However, Twitter in Germany is used in a different way from that in the US, e.g. usage frequencies. In Germany 56% of internet-users are active on Facebook, whereas just 6% are active on Twitter (BITKOM, 2013). The question arises whether, in general, German tweets contain relevant information as compared to US disaster management studies (e.g. Vieweg, Hughes, Starbird, & Palen, 2010). Furthermore the applicability of existing mining methods to non-English tweets and the selection of appropriate technology is a challenge.

The availability of sources of data, a taxonomy and ontology for guiding search, retrieval and storage have been identified as some key points for organizations to focus on when considering social media (Jennex, 2010). Suggestions for dynamic quality assessment of citizen generated content (Ludwig et al., 2015), implemented as tailorable quality assessment services (Reuter, Ludwig, Ritzkatis, et al., 2015) can only be successful, if these requirements are fulfilled.

In order to address these points, our study (1) aims to first examine whether German emergency tweets contain *additional* and *relevant* information, useful for forecasting, prevention or crisis intervention. This objective is evaluated with retrospective Tweet analysis of the European Flood 2013 data in Germany. Following the structure suggested by Vieweg et al. (2010) this study also investigates (2) if existing computational data mining systems can be applied to German crisis Tweets. Furthermore, we examine (3) which methods (computational versus manual-supervised) are valuable and practical in producing trustworthiness and secure information (see Figure 1).

Figure 1. Research gap and research questions
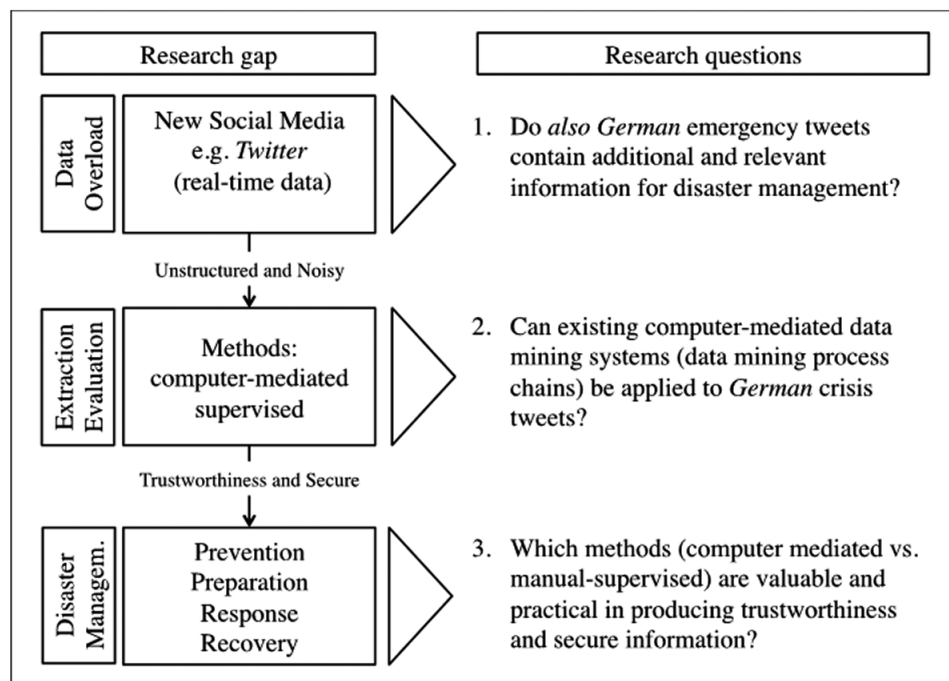
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