Motivation

These days, online media, weblogs, scientific and non-scientific discussion forums and direct electronic communication provide complements to the traditional reporting mechanisms. Electronic media and discussion groups are increasingly recognised as valuable sources of public health alerts. Awareness of diseases achieved through first-hand-observations and word of mouth can influence people’s behaviour in a way that the risk of an outbreak and the number of infected people is reduced. Given this new and rapidly changing environment, public health officials can no longer rely solely on the traditional surveillance systems, but must consider additional sources to enhance their detection capabilities. The goal of the M-Eco project is to develop innovative methods for the early detection of public health events from non-official sources; focusing on a tuneable and explainable event identification system.

Challenges

The biggest problem to deal with in the M-Eco project is Web data. Huge volumes of social media data and user generated content are available; lots of irrelevant content is provided, normally written in common language with spelling errors. Therefore, the M-Eco project will address R&D challenges in three areas: Event Detection, Adaptation and Tuning and Explanation and Validation:

- Event Detection: Reports and discussions on health events may influence each other, may repeat the same event across multiple sources and may contain hypothetical and opinionated information. M-Eco will focus on developing more sophisticated event detection and aggregation methods as well as methods to handle document dependencies and event redundancy.

- Adaptation and Tuning: Public health officials can potentially be inundated with large amounts of information since filtering, adaptation and recommendations are insufficient. M-Eco will come up with a sensitive tuning mechanism and adaptable detection of events which can reduce the number of false alarms.

- Explanation and Validation: It is important for officials to get the reasons leading to the signal explained. To improve accessibility and awareness of public health events, the M-Eco project will create the next generation of tools and methods for explaining and validating health information extracted from user generated content.

Highlights

This very interesting project in the area of patient safety and natural language processing started in January 2010 and is coordinated by the L3S Research Center. The L3S team will address the problem of extracting health events from social media data and user generated content. Further, methods will be developed to produce signals for alerting stakeholders of potential health hazards as early as possible.

Potential applications & future issues

M-Eco will support health organizations in becoming aware of the relevant and reliable signals to disease outbreaks and allow them to make decisions for taking appropriate actions.

Logo: M-Eco Medical EcoSystem
Project abstract:

Public health officials are faced with new challenges for outbreak alert and response due to the continuous emergence of infectious diseases and their contributing factors such as demographic change, or globalization. Only the early detection of disease activity, followed by a rapid response, can reduce the impact of epidemics. It is the goal of the M-Eco project to complement traditional systems with additional approaches for the early detection of emerging threats.

Project duration:
01.01.2010 - 30.06.2012

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Status of the Project: