Quick Links

ADVANCED SEARCH

PRESENTER INDEX

BROWSE

MY ITINERARY

Simple Search

Search Tips

CLEAR   SEARCH

Display As

Session

Presentation

Technical Support
Phone: 217-398-1792
Helpdesk

Presentation Abstract

Presentation:	391 - Disease outbreak articles as a source of queries for detection of signals of disease emergence on the Internet
Location:	Uxmal 2
Pres. Time:	Saturday, Nov 07, 2015, 3:00 PM - 3:15 PM
Category:	+C8. Surveillance, disease control/eradication programs

Author(s): Elena Arsevska[1,2], Thierry Lefrancois[1,2], Mathieu Roche[3,4,5], Renaud Lancelot[1,2], David Chavernac[1,2], Sylvain Falala[1,2], Pascal Hendrikx[6], Barbara Dufour[7], [1]Cirad, Montpellier, France; [2]Inra, Montpellier, France; [3]Cirad, Montpellier, France; [4]Irstea, Montpellier, France; [5]AgroParisTech, Montpellier, France; [6]Anses, Lyon, France; [7]EnvA, Maisons-Alfort, France. Contact: elena.arsevska@cirad.fr

Abstract: Timeliness and precision in detecting exotic animal infectious disease outbreaks is crucial for preventing their spread. In 2013, the French national platform for animal disease surveillance has set up an international epidemiological intelligence team (so-called VSI team) aiming at detecting, verifying and monitoring signals of disease emergence from different sources of information, including the Internet.

We propose an innovative method for monitoring disease emergence on the Internet. It is based on 3 sequential steps: 1) web crawling, 2) automatic classification of disease outbreak documents by machine learning approaches, 3) extraction of information from documents (e.g., disease, number of cases, location, etc.).

To query the web, the choice of relevant terms is crucial. For this purpose, we used text mining together with a collective domain expertise following a Delphi method. This approach allowed highlighting the relevant terms to detect signals of disease emergence on the Internet. We have applied it to detect documents addressing African swine fever (ASF) outbreaks (i.e. 123 dispatches from Google, and 45 from PubMed) written in English language, obtained for the period 2011-2014 with the baseline query "African swine fever outbreak".

Based on 2400 terms extracted with the text-mining approach, our automatic search system associated with the collective domain expertise (i.e. evaluation of 20 groups of terms by 21 specialists) identified 3 groups of highly specific terms to detect signals of ASF emergence: 1) haemorrhagic fever in *Suidae*, 2) mortality in *Suidae* and 3) swine fever. Implemented as complex queries, these groups of terms allowed finding previously undetected ASF outbreak articles with the baseline query (period 2011-14): 3 for each of groups 1 and 2, vs. 54 for group 3.

Monitoring disease emergence on the Internet is a promising method towards improved disease introduction risk assessment. Nevertheless, domain experts still play a central role. Our method is generic: we intend to evaluate it on data from other exotic infectious diseases and with real-time data stream. Should this evaluation be successful, the method might be routinely used by the VSI team.