Elena Arsevska, PhD, MSc, DVM

Title: Elaboration of a semi-automatic method for identification and analysis of signals of disease emergence at international level

Key words: Big data, Web surveillance, text mining, machine learning, free text, animal health, epidemic intelligence

Abstract: Monitoring animal health worldwide, especially the early detection of outbreaks of new and exotic pathogens, is one of the means of preventing the introduction of diseases in uninfected territories. Recently, there is an increasing awareness among veterinary services for the use of the information published in the media on the Web in epidemic intelligence purposes.

We present a semi-automatic approach developed for the French veterinary services which detects, collects, classifies and extracts information from free text media reports published on the Web. This approach is principally based on text mining techniques with however involvement of domain experts (Delphi method) in the identification of most appropriate terms to crawl the Web. We apply supervised machine learning algorithms to automatically classify and extract relevant information from media reports.

The approach has been implemented in the Platform for automatic detection of disease information on the Web (PADI-web). This Platform is currently used only by French veterinary services with intention to be publically available once improvements are made.

We show that the text mining techniques, supplemented by the knowledge of domain experts, are the foundation of an efficient and reactive system for monitoring disease emergence from non-structured text published on the Web.

Biography: Elena Arsevska holds a degree in veterinary medicine (in 2006) from the Faculty of veterinary medicine in Skopje (University Ss. Cyril and Methodius). She has two master degrees in epidemiology and statistics; one obtained in 2010 at the Medical faculty in Skopje (public health and epidemiology) and the second obtained in 2013 at the Veterinary school in Toulouse, France (animal health and epidemiology). Working for the Veterinary services in Macedonia from 2006 to 2012 she got involved with the idea of improving the analysis of the large data sets that the veterinary services collect from various sources. From 2013 to 2016 she worked as a Coordinator of the French epidemic intelligence team in animal health. In parallel she did her PhD work in Cirad, Montpellier and the Faculty of medicine at the University of Paris XI, Paris, France. She obtained her PhD in 2017. Her key research interests are analysis of large datasets, both structured and non-structured in the domain of public/animal health. From April she will start a three year postdoctoral project at the Faculty of veterinary medicine at the University of Liverpool, United Kingdom.