Data Mining and Tax

23 November 2017

University of Antwerp - Stadscampus

De Meerminne - aula M.005 - Sint-Jacobstraat 2, 2000 Antwerpen

A diverse array of people from academics, tax administrations and private corporations will shed some light on the opportunities and limitations of data mining as a key tool to support decision making. State-of-the-art data mining methodologies will be presented in case studies, focusing on enhancing fraud detection capabilities or improving internal operations of tax authorities altogether. Furthermore, we also dig deeper into privacy concerns regarding the use of (personal) data.

Price

€ 50,-

Free for academics, students and government officials

Programme

-12.50 - 13.20 h

Registration participants

-13.20 - 13.30 h

Welcome by David Martens (UAntwerpen)

-13.30 - 14.00 h

Corporate residence fraud detection by analysing large transactional network data
Jellis Vanhoeyveld (UAntwerpen)

Corporate residence fraud occurs when companies deceitfully attempt to place their residency in a low-tax country in order to avoid paying the higher taxes of their real location. In this study, we will analyse transactional data (invoicing logs) between Belgian and foreign companies to efficiently identify the most suspicious cases. As the number of fraudsters is dominated by the amount of legal cases, we will highlight several methods to cope with this imbalance. A final technique is

proposed that outperforms all others, both in terms of predictive performance and computational timings.

-14.00 - 14.30 h
Privacy considerations on data mining and profiling
Sylvie De Raedt (UGent)

In this lecture, some general rules on data protection (Privacy Directive and GDPR) and the right to privacy will be clarified. The problematic application of some of these rules on data mining and profiling will be demonstrated. Subsequently, the Belgian Law of 3 August 2012 that aimed to make the existing data mining practice of the Belgian tax administration compliant with the data protection rules, will be discussed.

-14.50 - 15.20 h
Detection of excise fraud in trading networks
Lore Cloots (Federal Public Service Finance, Customs & Excise, Belgium)

Although a minimum rate for excise goods is determined on the European level, the final rate is decided by the different member states. This results in different excise rates for similar excise goods between European countries. The European legislation also foresees that excise goods can be transported under suspension of excise duties, under the condition that the details of the movement are electronically declared in the Excise Movement Control System (EMCS). These rate differences and the possibility to transport excise goods without paying excise duties pose a potential fraud risk. The goal of this project was to assign a risk score for each company working in the EMCS, using a data-driven approach. We defined several features that characterize the behavior of a company, such as their activity in the EMCS, characteristics of their trading network and stock amounts. We combined these features in a neural network and a network score propagation to assign a final risk score to each company. Finally, the results of the project are distributed to the investigating officers by use of a web application.

-15.20 - 15.50 h
Reducing the cost to serve "High Attention Applicants" for tax benefits with machine learning
Harold Claassen (Dutch Tax Authority)

Relatively high resources are required to service a small group of applicants for tax benefits in the Netherlands. These so-called ‘High Attention Applicants’ show higher contact frequencies with service channels and elevated propensity to fight awarding decisions and exhibit lower compliance. This costly behavior can often be prevented with providing the right information before questions arise or with personal attention via a case-managers. Cluster analysis on the whole population of applicants revealed several different segments with a high percentage of ‘High Attention Applicants’ and provides more insight in the profile of these people. Several supervised learning algorithms turned out to be successful in predicting ‘High Attention Applicants’ for next year. Plans for small scale validation of predicted ‘High Attention Applicants’ on selected target groups via pro-active communication and the use case management are made. First results may be shown.

-15.50 - 16.20 h
Big4 speaker (to be confirmed)

-16.20 - 18.30 h Reception

Organisation

Antwerp Tax Academy i.s.m. CBR

Acknowledgement

IGO
OVB (3 legal points)
IAB (3 hours)