

Press Release

Vienna, 4 February 2020

CONSUMER PROTECTION ALSO IN THE DIGITAL WORLD THROUGH MACHINE LEARNING

AIT and ÖIAT strengthen their successful research cooperation to uncover discriminatory pricing.

Many are familiar with the rumour that one's smartphone, buying behaviour and location could be decisive for a price. But it is unclear to consumers whether this is actually dynamic or personalised pricing. With the result of the netidee project "preis.wert", which was completed in December 2019, a first step was taken towards more transparency in these questions.

Selected as one of 25 projects within the framework of the "netidee" funding campaign of the Internet Private Foundation Austria (IPA), experts from the ACR Institute ÖIAT (Austrian Institute for Applied Telecommunications) and data scientists at the AIT Austrian Institute of Technology developed a framework for monitoring data-based pricing practices in online retailing as well as a dashboard for analysing and visualising the data sets obtained. The first application of the tool shows: dynamic pricing is the order of the day in online retail.

Ongoing price changes for fashion and electronics items

Between 16 May and 23 September 2019, the price development of a total of 13 electronics and 7 fashion articles was queried in 50-minute intervals in two survey phases. The four best-selling online retailers for fashion and electronics in Austria were selected. Ongoing price changes were found at all online retailers observed. Many price changes were in the range of less than one euro, rarely were changes above 10 euros. Selected products were also examined with regard to personalised pricing. For this purpose, different end devices, cookies and VPN addresses were used to simulate a location outside of Vienna. Personalised pricing was not detectable under these conditions in the test.

An open source crawler for free further development

For surveys of this kind, a special analysis tool - a so-called crawler - was developed within the project framework, which is now freely available for use by individuals. It allows regular and automated queries of price points in online shops. The open source software is available under the GPL-3 licence. A manual that is freely accessible with the tool enables users with basic technical know-how to use the crawler as easily and quickly as possible.

The crawler enables, for example, cookie management for price comparison of new customers versus returning existing customers, VPN control for price comparison from different geo-locations and offers different user clients that enable price comparison from different devices.

The results of the empirical investigation and the legal analysis have been published as a study and can be read at www.mein-preis.at.

PRIMMING: Monitoring Price Discrimination through Machine-based Learning

The follow-up project PRIMMING ("Monitoring of Price Discrimination in Personalised Pricing for E-Commerce through Machine-Based Learning") is now comprehensively investigating data-based discriminatory pricing in e-commerce with machine learning methods in order to protect consumers from unfair prices on the internet and thus also to be able to take measures against gender disadvantages. The project is coordinated by ÖIAT in cooperation with AIT, Ciuvo GmbH and the Vienna University of Economics and Business Administration.

The project, which will run for two years (October 2019 - September 2021), was considered for funding in the 6th call for proposals by FEMtech in the BMVIT's "Talents" programme. The aim is to develop a price monitoring framework that simulates personas and generates query scenarios. With these, prices can be collected in automated tests in a controlled infrastructure. To do this, the crawler will mimic the behaviour of real people. This will make it possible to identify overlapping intersections of different causes of discrimination and to evaluate them. The results can be used to draw conclusions about the legal conformity of these pricing measures in online retail. The acceptance on the part of consumers with regard to gender-specific differences will also be evaluated.

The PRIMMING framework and the collected data sets will be made available as open source at the end of the project. This will enable consumer protection organisations, for example, to conduct systematic price monitoring and define query scenarios based on parameters such as location, end device, user client, cookie management or user behaviour. The tool can also be used for forecasting purposes because AIT's experience with predictive maintenance procedures, for example, will be incorporated into its development.

This will enable systematic and ongoing monitoring of important players in online commerce. In addition, small suppliers can be strengthened in making legally compliant decisions on price differentiation. PRIMMING will ensure more transparency for consumers and contribute to fair competition in online trade.

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