

Scientists develop lie detector test for written text

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Credit: Cardiff University

Scientists have developed a computer tool that can spot if somebody has filed a fake police statement based purely on the text included in the document.

Using a combination of automatic text analysis and advanced machine learning techniques, the tool has been able to successfully identify false

robbery reports with over 80 per cent accuracy.

The tool has now been rolled out across all of Spain to help support [police officers](#) and indicate where further investigations are necessary.

Known as VeriPol, the tool is specific to reports of robbery and can recognise patterns that are more common with false claims, such as the types of items reported stolen, finer details of incidents and descriptions of a perpetrator.

The research team, which included computer science experts from Cardiff University and Charles III University of Madrid, believe the tool could save the [police](#) both time and effort by complementing traditional investigative techniques, whilst also deterring people from filing fake statements in the first place.

The results of the study have been published in the academic journal Knowledge-Based Systems.

In many parts of the world the filing of false police statement is a crime that carries serious consequences, such as jail terms and heavy fines.

False statements not only contaminate police databases and damage the outcomes of criminal investigations, but also waste significant amounts of public resources that could be dedicated to pursuing other crimes.

Yet false reports are very common, especially in the reporting of low level crimes such as robbery.

VeriPol is partly based on a process known as natural language processing – a branch of artificial intelligence that helps computers understand, interpret and manipulate human language. For example, the computer tool uses algorithms to identify and quantify various features

in text, such as adjectives, acronyms, verbs, nouns, punctuation marks and numbers and figures.

Historical police reports that were known to be false have been fed through VeriPol so that it could code each one and begin to 'learn' the specific patterns.

An initial study of more than 1000 police reports from the Spanish National Police showed that VeriPol was 'extremely effective in discriminating between false and true reports', with a success rate of more than 80 per cent.

VeriPol identified a number of themes that were common amongst false robbery reports, including: shorter statements that were more focussed on the stolen property than the incident; a lack of precise detail about the incident itself; limited details of the attacker; and a lack of witnesses or other hard evidence, such as contacting a police officer or doctor straight after the incident.

"As an example, our model began to identify [false statements](#) where it was reported that incidents happened from behind or where the aggressors were wearing helmets," co-author of the study Dr. Jose Camacho-Collados, from Cardiff University's School of Computer Science and Informatics, said.

VeriPol was put to task on a real-life pilot study in the urban areas of Murcia and Malaga in Spain in June 2017. In just one week, 25 cases of false robbery reports were detected in Murcia, resulting in the cases being closed, and a further 39 were detected and closed in Malaga.

In comparison, over the course of eight years between 2008 and 2016, the average number of false reports detected and cases closed by police officers in the month of June was 3.33 for Murcia and 12.14 for Malaga.

After VeriPol had assigned a high probability of falsehood to the reports and the claimants were further interrogated, around 83 per cent of cases were subsequently closed.

"Our study has given us a fascinating insight into how people lie to the police, and a tool that can be used to deter people from doing so in the future," continued Dr. Camacho-Collados.

"Police officers across Spain are now using VeriPol and integrating it into their working practices. Ultimately we hope that by showing that automatic detection is possible it will deter people from lying to the police in the first instance."

Provided by Cardiff University

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