



The research commercialisation office of the University of Oxford, previously called **Isis Innovation**, has been renamed **Oxford University Innovation**

All documents and other materials will be updated accordingly. In the meantime the remaining content of this Isis Innovation document is still valid.

URLs beginning www.isis-innovation.com/... are automatically redirected to our new domain, www.innovation.ox.ac.uk/...

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The Zeitgeist in the Machine



TheySay, an advanced text and sentiment analytics company, has developed a platform which analyses huge amounts of unstructured text in real time. **David Morgan** explains

In September last year a pivotal moment in the history of the United Kingdom constitution had been determined by a huge turnout to vote YES or NO to Scottish independence. This caused emotions in the United Kingdom, and more specifically Scotland, to run wild.

Gladiatorial televised debates between Alex Salmond and Alastair Darling resulted in minute scrutiny of the personalities, and issues on “currency” became pitched battle grounds. The strident rhetoric from both sides was also matched by vitriolic back-and-forth across social media. Instant emotion, discussion and opinion was being experienced on a huge scale. Social media, news, blogs and chat rooms were bulging with outrage, nervousness, despondency and joy.

Between the 2nd and 19th September 1.75m tweets were sent, with 1.225m from YES supporters and 0.525m from NO supporters.

A challenge then, for people and machines, to understand those emotions and opinions coursing through the data. No one could possibly read everything, let alone aggregate insights into how people are feeling, across all the multi-dimensional loyalties, biases and events

expressed via thousands of messages an hour. But TheySay, a spin out from Oxford University founded by computational linguists, has built a sophisticated algorithm that analyses huge amounts of data in near real time. This involves over 68,000 rules being applied to the streaming data to determine the grammatical composition of the text. The machine effectively builds a picture of the relationships between the words in a phrase, sentence and document very similar to the way in which humans understand text. Then it extracts and assigns meaning and provides insights. These insights include sentiment (positive or negative), emotions (fear, anger, happiness and sadness), and sureness (certainty and confidence).

Can we trust the machine to behave like a human?

In the Scottish referendum, there were peaks of activity around the televised debates, but the real activity started to ramp up in the seven days up to the day of the vote, and for hours after. TheySay analysed all of the Twitter traffic from the 2nd to the 19th, and in that last week, things really got hot. Early predictions suggested there would be euphoria from the NO voters when the result became a



The TheySay 2015 General Election App

foregone conclusion, matched by despair (with a smattering of anger) from the YES voters. TheySay's technology detected exactly that. It also showed that during the week before the vote, YES voters had high levels of certainty and confidence, extreme levels of anger, fear and happiness. With NO voters, there was less certainty and confidence (with noticeable drops and peaks in fearfulness), and flat readings for happiness and sadness. In contrast, in the early hours of the day after the vote, the YES voters descended into abject misery whereas the NO voters were bouncing with positivity.

A vote of confidence

TheySay is repeating this exercise for the 2015 General Election. This time, the four party leaders, Cameron, Miliband, Clegg and Farage will be tracked against key issues like the economy, education and the NHS. Real-time graphical information will be displayed, including time slices of the day, last week and month. Social media scores and sentiment scores for each party leader in the aggregate, will also be included.

A lesson from the Scottish referendum indicated the number of people voting on social media is small and, analysis is restricted to a certain demographic. So

whilst TheySay's analysis is not a prediction of outcome, the machine is nevertheless detecting aspects of the Zeitgeist influencing the result.

There is a public site (optimised for mobile) at ge2015.theysay.io

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