

Meet ANGIE, the ATO's secret weapon against tax cheats

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The Australian Taxation Office is using a new Netflix-like artificial intelligence tool to identify suspicious activity within the complicated affairs of wealthy individuals and companies.

ANGIE (Automated Network & Grouping Identification Engine) creates maps of corporate entities and related transactions across time. It can identify connections and relationships and "patterns of interest" for revenue authorities to investigate.

The technology is similar to that used by Netflix to make recommendations based on patterns of usage. Google uses similar database technology to rank its search returns based on relevance, and LinkedIn also applies a

similar artificial intelligence model to find networks of people based on common linkages, such as schools.

"The computers never get tired. They just keep going and keep cycling through, creating probabilistic links in the network," ATO deputy commissioner Marek Rucinski said.

"It really is about bringing transparency to corporate transactions and structures that are sometimes extremely complex," he said.

"AI allows us to cut through the fog of data, so humans can make better judgment calls."

Mr Rucinski said that by layering different data sets progressively, the ATO could create clear and new connections in the [corporate] network.

"Imagine millions of interactions that are coming from multiple dimensions.

AI allows us to cut through the fog of data.

Marek Rucinski, ATO

It is very hard for a human mind to internalise that and try to draw all those lines, how an ownership interacts with the previous ownership, and where the indirect ownership paths lead."

Mr Rucinski came from consulting firm Accenture in 2018 to lead Smarter Data, the ATO's data and analytics capability.

ANGIE has been running in a beta testing phase for the last six months, and has now been put to wider use.

ANGIE provides an easy to comprehend visualisation, which ATO staff then use to investigate the integrity of corporate structures or transactions.

The ATO is one of the leading Commonwealth agencies in its use of artificial intelligence and machine learning to expose fraud and tax avoidance. ANGIE is one of about 150 machine-learning and deep-learning models the ATO is now using.

The ATO recently busted a major GST fraud ring, saving over \$2 billion in lost revenue using advanced analytical tools that found patterns of suspicious behaviour among false businesses claiming GST.

AI is also being used to nudge taxpayers – by sending a query, for example – when their deduction claims are inconsistent with claims from similar

taxpayers. The smart tools analyse expense receipts from taxpayers claiming work-related deductions, and help ATO staff focus on higher-risk claims.

ANGIE has been in development since 2019, after consulting firm McKinsey had helped to develop the proof of concept using graph database technology to aid the tax office's high-complexity compliance work.

TigerGraph software from Sydney based Intech Solutions is optimised for investigations, compliance and financial fraud detection.

A graph database visualises complex networks by storing data about entities (nodes) and their relationships (edges). "Some of the most complex corporate structures obviously are global in nature, with hundreds of thousands of entities," Mr Rucinski said.