Improving cost and efficiency when analysing visual data

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Large scale asset networks require huge amounts of oversight to maintain optimal safety and service levels. By using AI, the amount of data which can be processed on a continuous basis increases exponentially, while costs are simultaneously reduced.

This way of working is also highly aligned with regulators' current digitisation agenda; to use and store data more efficiently.

Keen AI's work at National Grid has reduced condition assessment process time for overhead line assets by 66%. It does this by filtering out images where there isn't anything of interest and drawing attention to any information which could indicate a potential defect (Amjad Karim, pictured right).

We have been able to deploy similarly AI based techniques to rail side ecological surveys for Network Rail across the UK; using AI to identify images containing possible plants of interest across the network. The system flags this information to an ecologist to review - leading to surveys that are not only completed in a third of the previous timescale, but are also cheaper and safer to carry out.

Using AI to better understand the state of your assets

Many organisations are awash with visual data; some they actively gather; much else arrives as a by-product of other operations.

Technology is increasingly used to collect as much visual data as possible but unfortunately, there is a global shortage of skilled engineers with the knowledge to review and interpret this data, not to mention turning it into actionable information.

Improved ability to collect information merely exacerbates the situation, as typically, more and more data ends up being passed through the same number of people. Not surprisingly, the result is often a larger backlog of data to review - and overworked staff.

The problem with managing huge volumes of information tends to be twofold. Firstly, how do you process all this data, when the capacity for human analysis tends to be limited, slow and highly expensive?

Secondly, how do you store and arrange data in a way that lets us learn from it; utilising its full power to reveal or predict changing conditions over time? Very often companies simply have no idea how to maximise the return on the data they

so expensively collect.

Clearly, data collection is a good thing but organisations need to be more selective about where they deploy their attention.

Artificial Intelligence is well placed to provide this selective attention mechanism.

Emerging technology

In the real world, the main role for those involved in AI and machine learning is to solve highly specific issues in a more efficient and cost-effective way.

Keen AI's new KAI platform uses artificial intelligence and machine learning to condense, store and compare vast amounts of visual data; delivering fast analysis and valuable trend prediction for a wide range of applications.

The idea was initially born through working on risk assessment for National Grid in 2018; carrying out condition assessment of overhead line assets. This required the team to develop a reliable model to identify components from video footage.

Understandably, there were fears that the system would be complex, expensive and time-consuming to design but the KAI platform for National Grid was initially deployed in just two months.

The reactions of those who have embraced AI speak for themselves, with Mark Simmons, Monitoring Team Leader at National Grid saying, "*Any fears that developing the system would be heavy on either cost or reliance on our internal computing teams were quickly swept away.*

"*The KAI system was a game-changer in assessing risk and improving the speed of assessment but it is possibly the machine-learning element which is the most exciting; we are able to get a digital overview of the network in a way that has never before been possible.*"

Using the ability to process information much faster than humans, and to continually improve the quality of analysis over time, AI and machine learning offer exciting opportunities to help demand keep up with an ever-increasing supply of visual imagery.

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