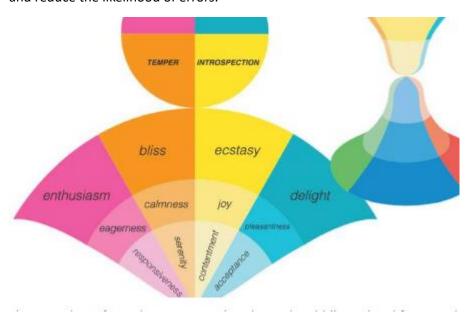26 February 2024

Translated from Chinese

Transforming the future of media with artificial intelligence

Artificial intelligence (AI) is revolutionising the way we live and work, with the ability to analyse large data sets to identify patterns and predict outcomes at the click of a button.

Able to analyse large data sets to identify patterns and predict outcomes, all at the click of a button, artificial intelligence (AI) is revolutionising the way we live and work. From providing personalised recommendations to automating tedious tasks, AI can help us make better decisions, work smarter and reduce the likelihood of errors.

AI-powered chatbots such as ChatGPT have transformed the media landscape. They can now hold human-like conversations, generate content and analyse emotion in text - abilities once thought to be unique to humans.

Given the sheer volume of social media posts and messages on the internet, AI's ability to decode sentiment from text could be a game-changer for applications such as sentiment analysis in media monitoring and blocking malicious content.

Decoding emotions

However, AI is still not as effective as humans at identifying emotions in text. Understanding emotional tone from written text involves understanding the world and social norms that humans learn through experience, something that artificial intelligence cannot do.

The artificial intelligence platform SenticNet aims to solve the challenges faced by artificial intelligence in understanding human language. Developed by Professor Erik Cambria from Nanyang Technological University's School of Computer Science and Engineering (SCSE), SenticNet combines human learning patterns with traditional learning methods used by machines to improve algorithms' ability to analyse emotions.

SenticNet follows a logical process to infer the emotion expressed in a sentence by classifying word meanings in a framework similar to commonsense reasoning. Unlike traditional sentiment analysis models, which are often "black boxes" that do not provide insight into their internal reasoning processes, SenticNet's process of arriving at results is transparent, and the results are repeatable and reliable.

Professor Cambria said: "AI systems are becoming less and less transparent, and we hope that SenticNet can extract emotion from text in an interpretable way without affecting performance."

Researchers have shown that combining common sense reasoning with machine learning methods can improve performance. After testing, SenticNet outperforms other machine learning models.

The latest version of SenticNet has been reported in the *Proceedings of the 2022 13th Conference on Language Resources and Assessment*.

Professor Cambria is also working to improve SenticNet's ability to encode and decode the meaning behind abstract concepts, which is a major challenge for artificial intelligence systems because they do not have the rich sensory experience of the real world that humans have.

Search videos

Videos, with their moving visuals and sounds, are an engaging way to convey information and teach concepts. In order to allow users to better engage with educational and entertainment video content, a method developed by SCSE Associate Professor Sun Aixin can search video content by matching keywords with screen images.

Traditional computer vision techniques can do this, but are not efficient when searching for images in long videos.

Associate Professor Sun and his colleagues developed an algorithm that treats videos as paragraphs of text so that people can search for specific moments in the clip. Using this method, long videos can be divided into multiple shorter segments for search.

Associate Professor Sun said: "This simple and effective strategy can effectively search images in long videos, solving the performance degradation problem that traditional computer vision technology often encounters when searching long videos."

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