What it is and what does it achieve?

Smart messaging apps and email systems use word prediction techniques to predict and guess what word to type next making message composing and drafting to colleagues and friends quicker. When you start to reply to an email in gmail, if you type out the first few letters the rest of the sentence pops up in greyed out words and letters suggesting what you should type out to finish your sentence. This technology in Google's gmail is powered by an artificial intelligence model called natural language processing (NLP), which makes machines understand natural languages in the same way that humans would.

Similarly machines such as smartphones or computers use AI and NLP to associate a word to its contextual meaning by looking at the style or context. Prediction is fundamental to our perception and our relation to the world," says Maria Geffen of the University of Pennsylvania. Our brain makes predictions constantly. For example if a person says the word 'jam' which can be interpreted as either traffic moving slowly due to the higher number of cars on the road or to a spread that can be applied on a sliced bread to be served as food. If the conversation before the word mentioned was about feeling hungry then the meaning for the word would be linked with the second scenario. However if the word popped up in conversation when out driving then its meaning would be related to the first scenario.

How does next word prediction systems work?

Next word prediction involves either next word suggestion or next word completion as the first few characters of a word are typed in. Next word suggestion predicts the most probable next word based on previously entered words rather than on the first few characters of the word. Next word prediction technologies historically use statistical approaches such as Markov's model but since the early 1990s Artificial Intelligence techniques such as deep learning and neural networks algorithms are heavily employed in such systems. Word frequency sequence method which depends on a text corpus is also another approach that is used in next word prediction tools.

References

How 'Smart' email could change the way we talk. Machine Minds and Artificial Intelligence 13 August 2019, from https://www.bbc.com/future/article/20190812-how-ai-powered-predictive-text-affects-your-brain?zephr-modal-register.