

Could we teach a computer to predict like a human?

This is one of the many burning questions that filled my mind until I stumbled upon Dr. Edward Kim's research. Dr. Kim works in artificial intelligence and conducts experiments that simulate the human mind. I love artificial intelligence. There is something magical about mapping our psychological behavior to a computer that tingles my mind. I guess it's the notion of creating super smart computers that cannot be told apart from a real human and using them to study the phenomenon of human intelligence.

The truth is that human cognition is limitless; many mysteries of the human brain remain unsolved, waiting for someone daring to tackle them. As someone who takes a keen interest in psychology, I want to uncover each unknown one by one through artificial intelligence. In particular, my branch of interest in artificial intelligence lies in neural networks, which are computational systems modeled by the human brain. Not only does Edward Kim explore neural networks, but he recently used them to create a computer that mimics human prediction.

In his experiment, "Spatiotemporal Memory for Prediction Using Deep Sparse Coding," Kim developed an artificial model that, after being fed video input, could reconstruct the next video frame, even if omitted. My first impression? "What a title... What on Earth could these words possibly mean?"

Spatiotemporal memory lets us recall information with regards to space and time, or the "where" and "when." Sparse coding is a machine learning technique that enables a computer system to encode information through neurons, where unique combinations of neurons may produce a different output. Such is an example of a neural network.

I love the way Dr. Kim approached the solution. According to psychology, we learn to predict through a similar method after all. First, we observe our environment, then encode the information, and when it finally comes time to make a prediction, we draw on our stored memory to anticipate the future. There is a reason why our brains are called prediction machines.

Thus, Dr. Kim used sparse coding and spatiotemporal memory for his artificial model. First, the artificial model was trained over one thousand frames of a video sequence. Then, it encoded the information in a dictionary. Finally, Dr. Kim fed the artificial model individual frames from a new video, omitted the last frame, and let the model reconstruct the frame itself.

Did he do it? Was the experiment a success?

The answer is a resounding yes! Through his experiment, Dr. Edward Kim answered the question I so desperately longed to solve. Not only can we build a computer that predicts the future, but we can also prove the psychological theory of prediction through artificial intelligence.

Here's the beauty of it all: this is but one of many experiments Dr. Kim modeled after a craving to answer a question. Take his artificial model Vinereactor, for example, a revolutionary database that explores facial expressions and creates a link between a human and a computer. Dr. Kim wondered how to improve the exchange of communication between man and machine. His creation now provides us with valuable

insight into how we perceive each other's facial expressions. Dr. Kim's aptitude for creating his own solutions is why I want to work alongside him.

Even with time, we may never uncover every intricacy of the human brain. But we can certainly try. Especially now because artificial intelligence is more prominent and advanced than ever. I want to learn alongside Dr. Edward Kim as he develops cutting-edge artificial intelligence that helps us understand the human brain. And hopefully, Dr. Kim and I will get to tackle one of the most intriguing mysteries of them all: dreams, and how we can use artificial intelligence to analyze them.