

Canada's new Nobel Laureate Issues a Warning By Gerald Trites

Geoffrey Hinton, 76, a University of Toronto computer scientist, has been named a co-recipient of this year's Nobel Prize in Physics. Dr. Hinton was awarded the prize together with John Hopfield, 91, professor emeritus at Princeton University.

Their work on neural networks laid the groundwork for the AI revolution currently taking place. Neural networks can adjust themselves in response to their own performance, gradually optimizing their ability to solve various kinds of calculations. With the rapid increase in computer speed and data availability over recent years, machine learning has provided the basis for the development of generative AI.

Dr. Hopfield had an interest in how neurons in the brain act together to store and retrieve information. This led him to discover a computer-based analog which became known as the Hopfield network, which allows a machine to retrieve a stored pattern that is most similar to a given input.

Dr. Hinton made use of Hopfield networks when developing a data-recognition algorithm, which used methods drawn from statistical physics, and came up with a system that could be trained by using examples. Hinton continued to develop the idea, using networks constructed in layers that could break down a task into bite-sized pieces that together led to an answer that was most likely to be correct. By adjusting how much weight to give to each of its subcomponents, the system could keep improving.

Development moved ahead so rapidly that Dr. Hinton became concerned about the risks of the new AI technology. He resigned his post at Google so he could speak more freely.

"It'll mean huge improvements in productivity. But we also have to worry about a number of possible bad consequences, particularly the threat of these things getting out of control," he said during a news conference held in Stockholm to announce the Nobel prize. More recently he and some others in the field have said that the new Gen AI systems have the capacity to exceed the intelligence of humans, which could lead to issues of control. Considering the role played so far by the speed of computers, along with the more recent growth of quantum computing, it could be science fiction made real!