Geoffrey Everest Hinton (born 6 December 1947) is an English Canadian cognitive psychologist and computer scientist, most noted for his work on artificial neural networks. Since 2013 he divides his time working for Google (Google Brain) and the University of Toronto. In 2017, he cofounded and became the Chief Scientific Advisor of the Vector Institute in Toronto. With David E. Rumelhart and Ronald J. Williams, Hinton was co-author of a highly cited paper published in 1986 that popularized the backpropagation algorithm for training multi-layer neural networks, although they were not the first to propose the approach. Hinton is viewed by some as a leading figure in the deep learning community and is referred to by some as the "Godfather of Deep Learning". The dramatic image-recognition milestone of the AlexNet designed by his student Alex Krizhevsky for the ImageNet challenge 2012 helped to revolutionize the field of computer vision. Hinton was awarded the 2018 Turing Prize alongside Yoshua Bengio and Yann LeCun for their work on deep learning.Hinton - together with Yoshua Bengio and Yann LeCun - are referred to by some as the "Godfathers of AI". Education Hinton was educated at King\'s College, Cambridge graduating in 1970, with a Bachelor of Arts in experimental psychology. He continued his study at the University of Edinburgh where he was awarded a PhD in artificial intelligence in 1978 for research supervised by Christopher Longuet-Higgins.Career and research After his PhD he worked at the University of Sussex, and (after difficulty finding funding in Britain) the University of California, San Diego, and Carnegie Mellon University. He was the founding director of the Gatsby Charitable Foundation Computational Neuroscience Unit at University College London, and is currently a professor in the computer science department at the University of Toronto. He holds a Canada Research Chair in Machine Learning, and is currently an advisor for the Learning in Machines & Brains program at the Canadian Institute for Advanced Research. Hinton taught a free online course on Neural Networks on the education platform Coursera in 2012. Hinton joined Google in March 2013 when his company, DNNresearch Inc., was acquired. He is planning to "divide his time between his university research and his work at Google".Hinton\'s research investigates ways of using neural networks for machine learning, memory, perception and symbol processing. He has authored or co-authored over 200 peer reviewed publications.While Hinton was a professor at Carnegie Mellon University (1982–1987), David E. Rumelhart and Hinton and Ronald J. Williams applied the backpropagation algorithm to multi-layer neural networks. Their experiments showed that such networks can learn useful internal representations of data. In an interview of 2018, Hinton said that "David E. Rumelhart came up with the basic idea of backpropagation, so it\'s his invention." Although this work was important in popularizing backpropagation, it was not the first to suggest the approach. Reverse-mode automatic differentiation, of which backpropagation is a special case, was proposed by Seppo Linnainmaa in 1970, and Paul Werbos proposed to use it to train neural networks in 1974.During the same period, Hinton co-invented Boltzmann machines with David Ackley and Terry Sejnowski. His other contributions to neural network research include distributed representations, time delay neural network, mixtures of experts, Helmholtz machines and Product of Experts. In 2007 Hinton coauthored an unsupervised learning paper titled Unsupervised learning of image transformations. An accessible introduction to Geoffrey Hinton\'s research can be found in his articles in Scientific American in September 1992 and October 1993.. \nIn October and November 2017 respectively, Hinton published two open access research papers on the theme of capsule neural networks, which according to Hinton are "finally something that works well."Notable former PhD students and postdoctoral researchers from his group include Richard Zemel, Brendan Frey, Radford M. Neal, Ruslan Salakhutdinov, Ilya Sutskever, Yann LeCun and Zoubin Ghahramani.Honours and awards Hinton was elected a Fellow of the Royal Society (FRS) in 1998. He was the first winner of the Rumelhart Prize in 2001. His certificate of election for the Royal Society reads: \n\nIn 2001, Hinton was awarded an Honorary Doctorate from the University of Edinburgh. He was the 2005 recipient of the IJCAI Award for Research Excellence lifetime-achievement award. He has also been awarded the 2011 Herzberg Canada Gold Medal for Science and Engineering. In 2013, Hinton was awarded an Honorary Doctorate from the Université de Sherbrooke.In 2016, he was elected a foreign member of National Academy of Engineering "For contributions to the theory and practice of artificial neural networks and their application to speech recognition and computer vision". He also received the 2016 IEEE/RSE Wolfson James Clerk Maxwell Award.He has won the BBVA Foundation Frontiers of Knowledge Award (2016) in the Information and Communication Technologies category "for his pioneering and highly influential work" to endow machines with the ability to learn.Together with Yann LeCun, and Yoshua Bengio, Hinton won the 2018 Turing Award for conceptual and engineering breakthroughs that have made deep neural networks a critical component of computing. Personal life Hinton is the great-great-grandson both of logician George