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Coexistence of Artificial Intelligence and Humans

Recently, I see a lot in the news about Artificial Intelligence (AI). The AI cognitive computer, 'Watson', developed by IBM defeated the human champion on a U.S. quiz show and a research report released by Oxford University claims that within the next ten to twenty years, around half of the jobs that exist today in the U.S. will be replaced with computers. Will AI surpass we humans in the near future?

The Dartmouth summer research project of 1956 was where the term 'Artificial Intelligence' appeared for the first time. It was at this point that people began calling machines capable of thinking like humans 'Artificial Intelligence', and research to achieve AI began. Spurred on by our anticipation that AI could be helpful for the human race, there have been two AI booms to date.

The first boom went from the late half of the 1950s to the 1960s and involved research into computers that could reason and search to find the answer to a specific question. For a computer to perform the human thought processes of reasoning and searching (algorithm), it must first have this algorithm defined in a language it can understand. Once this has been translated into computer language, the computer will process it at high speed and produce an answer. With this kind of technology, computers have beaten the world chess champion and even the late Shogi grandmaster, Kunio Yonenaga. Thus, it is apparent that computers are surpassing humans in the field of games.

The second AI boom was in the 1980s. Unlike the first boom in which humans tried to practicalize AI with rules for reasoning and searching, the second boom involved attempting to instill knowledge into computers. It was anticipated that if computers could be instilled with expert knowledge they could, for example, make a medical diagnosis instead of a human doctor or be consulted with regarding legal issues instead of a lawyer. The AI systems referred to as 'expert systems' behaved like professional practitioners by absorbing knowledge in specialist fields and using this to reason. Expert systems were applied to various fields, including medical, manufacturing,

accounting, personnel affairs and finance, and helped to save labor and improve productivity. This kind of AI has advanced to the point where it partly compensates for humans in regards to our jobs however essentially, humans assume the role of teacher whereby we teach computers knowledge and reasoning rules. In the future, computers will need to become capable of learning for themselves in order to help humans even more.

The human brain contains a vast amount of knowledge. This knowledge is classified by features (core elements which sort knowledge in order for us to be able to recognize it) which each human being possesses, and this enables us to judge, identify and predict even that which is unknown to us. Currently, research is being conducted to enable computers to generate such features without relying on humans which, if achieved, would be an epoch-making milestone. This technology is known as 'deep learning'. For the purposes of keeping my message here brief I will not go into detail but this technology has the potential to enable computers to learn without the need for humans to teach them. If realized, it is anticipated such technology could be applied in various areas, such as higher-accuracy X-rays and automatic CT image diagnosis, autonomous driving technology and naturally-flowing translation and interpreting.

Furthermore, by combining this technology with robots, it could become possible for robots to replace humans in conventionally interpersonal services such as house works, medical and aged care. Sanyo Denki's cooling fans, power sources and motor products are components imperative to the advancement of this type of robot technology. This report contains all of Sanyo Denki's technical developments for fiscal year 2015. Through the development of new products, Sanyo Denki will continue to help all people achieve happiness, and work with people to make their dreams come true.

Reference: Will AI surpass humans? (Yutaka Matsuo)