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Intellectual Property, Taiwan Robotic technologies and their patent portfolios

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In October 2014 the Industrial Development Bureau of the Ministry of Economic Affairs launched the Productivity 4.0 Project in order to promote Industry 4.0 in Taiwan. At the opening ceremony of the Third Asian Congress of Robotic and Endoscopic Surgery held in November 2017, Vice President Chien-Jen Chen stated that developing the robotics industry is one of the key projects of Industry 4.0.

The robotic technologies developed in the era of Industry 4.0 include smart sensing, data collection, machine learning, feedback and control. Robotic technologies can be used in different areas. For example, during the automated production of devices, the status of the semi-finished products are detected and relevant data is collected at each stage of production. Upon computing the collected data, a possible yield rate of the final products can be predicted and the prediction can provide feedback for the sequent production process in order to improve the yield rate of the next round of production. If any of the data collected during the automated production of devices is outside of the process window, a notice can be issued in advance to terminate the production process, which can help to control production costs and maintain production efficiency. In addition, the use of equipment can be monitored during the production process, which can help to predict when certain parts of the equipment must be replaced.

There is no doubt that the new generation of robots will revolutionise lives, and subsequently many companies are developing and building a global patent portfolio for robotic technologies.

In the age of Industry 4.0, robots are equipped with enormous computational power in order to carry out instructions to achieve a certain objective. The instructions are given by people. Although machine learning is performed by a computer through a series of computation processes, human intelligence is still required. The results are produced by robots through re-invention or re-recreation by executing programs developed by humans. Accordingly, the results from the robots are creations of artificial intelligence, which are in fact extensions of people's creations.

The Patent Act defines an 'invention' as a creation of technical ideas using the laws of nature. According to the Patent Examination Guidelines, although a computer program per se does not meet the act's definition, it will be met if the computer program has a technical character and can solve a technical problem. In the new generation of robots, all kinds of process rely on the use of human intelligence (eg, computation programs for processing raw data, simulation models for machine learning and feedback mechanisms). Therefore, a patent portfolio for inventions relating to robots with artificial intelligence should focus on the technical features of man-made inventions and creations and consider their various possible applications in order to obtain a reasonable scope of patent protection. Further, patent portfolio wars will significantly affect innovation, research and development of new robotic technologies.

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