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Editorial

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The New Role of Neurosurgeons and New Fields of Neurosurgical Research in the New Era

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<blockquote>
▸ See the article "Application of Deep Learning System into the Development of Communication Device for Quadriplegic Patient" in volume 15 on page 88.
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Since the eighteenth century, humanity has experienced 3 industrial revolutions, and now we are living in the Fourth Industrial Revolution; one represented by big data, Artificial Intelligence (AI), robots and the Internet of Things (IOT). Among the 4 industrial revolutions that the world has witnessed, I believe that it is the Fourth Industrial Revolution that will bring about the most rapid change.

Many documents and articles say that over the next 10 to 20 years half of existing jobs will disappear and many new jobs will be created.

Some have selected the medical field as the area which will see the most serious job replacement effects due to advances in smart technology such as AI and robots, and physicians and pharmacists, which are considered the most stable jobs at present, will be most affected.

In some countries, AI has competed with medical students or physicians, and the results showed, as expected, that AI exceeds the abilities of human physicians. Medical counseling AI applications are already commercially available, and perhaps in the near future, robots that can even operate on a patient with their own abilities, like those only seen in movies, may actually replace doctors. Despite the opinion that AI will eventually replace 80% of doctors; fortunately, while AI or robots can help doctors with treatment, it is still difficult to completely replace them.

However, it is clear that some roles of physicians will change in the future. That is, the doctors themselves will not disappear, instead there will be disappearing roles. Some roles will remain, and other new roles will be created. Perhaps the role of conducting diagnoses will decrease, and the role of performing surgery will remain for the time being. So, what will be the physician's new role?

Every industry in the world is, after all, for mankind. Its focus is on human life and for the quality of human life. Therefore, the roles of doctors, who are the most expert on human life and human science, are infinite in various industrial fields. Neurosurgeons especially should

play the most important role because they are experts on the nervous system, including the brain and spine that artificial intelligence and robots should resemble.

Lee et al.[1] developed a communication device for quadriplegic patients using Deep Learning System of AI and presented the results with respect to present issues. This deep learning system used a relatively simple process and program, but this is not yet familiar to neurosurgeons. However, in the future, neurosurgeons will play a pivotal role in the application of AI and robots, as well as in the development of their own devices. They will also participate in a great deal of collaborative research with the healthcare industry. The *Korean Journal of Neurotrauma* should also prepare for the new role of neurosurgeons and new fields of research in the new era.

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