

A Study of Limitations of Artificial Intelligence and Creative Education of Future Information [†]

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Abstract: When we discuss education under the background of the development of artificial intelligence, we must first analyze what algorithm-based artificial intelligence can and cannot do. Our education should focus on training people to learn and exercise the abilities that artificial intelligence is not good at or lacks. Only in this way can we give full play to the greatest potential of human intelligence under the blessing of artificial intelligence. Philosophy of information puts forward the idea of an information creation system to describe what kind of information creation ability real intelligence should have. Considering the functions of 9 subsystems, AI has completely or simply possessed some of the subsystem functions, but it still seriously lacks the capabilities of three subsystems. The future education of information creation is launched for the lack of abilities of these three artificial intelligences.

Keywords: deep learning algorithm; the philosophy of information; information creation system; future education; philosophy education



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1. Introduction

The development of artificial intelligence not only promotes the growth of social productivity but also brings great challenges to human educational ideas. With the rapid development of artificial intelligence, the development level of human individual reinforcement has entered a new era. Nowadays, it is very convenient for human beings to obtain all kinds of information. A networked mobile phone can enable users to obtain almost endless knowledge and solutions to countless problems without being limited by region, time, and language. This is only the initial stage of “human reinforcement”, a human–computer interaction stage.

Brain–computer interface technology is trying to combine human consciousness with artificial intelligence. Brain–computer interface (BCI) refers to the direct connection between the human or animal brain and external equipment to realize the information exchange between the brain and equipment. In the future, human beings can easily obtain information through a brain–computer interface, including sound, image, and text. All human accumulated knowledge will be presented to anyone who wants to obtain it in an instant, and even memory transplantation can be carried out.

If calculators have been integrated into the human brain, do humans still need to learn multiplication formulas? If all the articles and poems in historical documents have been integrated into the human brain, do we still need to recite ancient texts and poems? If so, where should we go in today's education focusing on telelearning? [1].

2. Information Creation System

When we discuss education under the background of the development of artificial intelligence we must first analyze two problems: what algorithm-based artificial intelligence can do and what it cannot do. Our education should focus on training people to learn and exercise the abilities that artificial intelligence is not good at or lacks. Only in this way can we give full play to the greatest potential of human intelligence under the blessing of artificial intelligence.

Wu Kun put forward the idea of an information creation system in his epistemology of the philosophy of information, as shown in Figure 1.

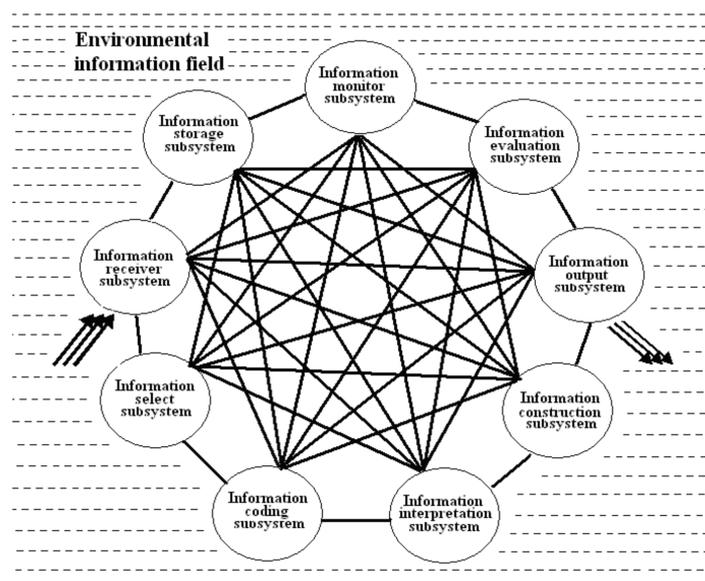


Figure 1. Information creation system structure model [2].

An information creation system is a system that generates new information through the processing of existing information. The work of this kind of system is different from the simple coding and decoding activities in the process of information transmission and reception shown by a general algorithm-based artificial intelligence. The focus of information creation is not to simply maintain, transform, reproduce, or copy the mode and content of existing information, but to make innovative changes. According to the general characteristics of information activities, information creation is realized through information integration and reorganization. This process is consistent with the creative activities of re decomposition, integration, selection, matching, and construction of existing information [3].

An information creation system is a composite system with multiple information processing functions. Figure 1 shows an information creation system with internal randomness of human subject thinking processing. The system is formed by nine functional subsystems through the network connection [4].

Today’s artificial intelligence based on algorithms and highly expected deep learning algorithms cannot achieve the so-called “intelligence”. The intelligence of the subject needs to be integrated from bottom to top, and the information activities at all levels will become an organic whole. The interaction of information at all levels makes the subject’s intelligence, as a complex system, not only have the characteristics of evolution but also have the nature of system emergence. Thus, we can improve ourselves through the continuous creation of information and the continuous self-condensation in the system, and then it is possible for a phenomenon such as intelligence to emerge. This requires a random information creation system.

3. Subsystems Lacking in Artificial Intelligence

The activities of the nine subsystems in the structural model of the information creation system are coordinated, supported, and mutually background and conditioned. No matter what level of information processing activities are at, and no matter which subsystem's activities are carried out, all subsystems need to act. Judging from the functions of these nine subsystems, artificial intelligence has relatively complete functions of four of these subsystems and has an advantage over human ability as follows: 1. Information receiving subsystem: this is the input end of external information, responsible for obtaining information from the environment and identifying and recognizing its reproducibility. 2. Information storage subsystem: its function is to store externally received information and internally generated information for subsequent information processing activities. 3. Information coding subsystem: this can encode all kinds of information in the unique way of the system and transform object information into a form that is easy to be transmitted, stored, operated, and processed by the system. 4. Information output subsystem: this is the information output end of the external environment and is responsible for transmitting the corresponding information in the system to the outside of the system.

It simply has the functions of two subsystems: 1. Information selection subsystem, which provides information screening and extraction for information processing activities at various levels so that the information processing activities of the system have corresponding selectivity. 2. Information monitoring subsystem, which can provide a general awakening and attention background for all kinds of information processing activities, and can supervise and control the direction, mode, speed, quality, process, and results of all kinds of information processing.

Finally, it lacks the functions of the three most critical subsystems: 1. Information interpretation subsystem: it is responsible for deciphering, interpreting, and expressing the information content represented by patterns or symbols in various codes, to accurately and necessary grasp and understand the processed information. 2. Information evaluation subsystem: it can evaluate all kinds of information content, coding, and interpretation methods, monitoring effect, and the process and results of all kinds of information processing activities. 3. Information construction subsystem: it has the functions of specific matching, integration, and reorganization of various selected information.

4. Future Education of Information Creation

In the future, with the rapid development of artificial intelligence, the man-machine combination will completely enable humans to discard the learning method of rote. In the era of human brain information explosion in the future, any education and testing methods that need humans to recite, calculate and memorize knowledge with standard answers will also be eliminated, which will cause an earth-shaking educational revolution.

Our education direction should focus on an information creation education model. We can start with the functions of the three subsystems most lacking in artificial intelligence proposed above to build the focus and core tasks of future education.

Firstly, compared with the information interpretation subsystem, the way information is obtained by artificial intelligence is through the information input of perceptron. Taking the light sensor as an example, the sensor imitates the visual process of the subject. The photosensitive element samples and encodes the information carried by the external light and stores it in the information storage subsystem. However, this process is very different from the subject's perception process. This process can only be said to be "feeling", not "knowledge". For intelligent agents, perception is the process of understanding and interpreting the identified information. The perceptron only converts a series of data (symbols) into other data (symbols) and does not make any interpretation of this symbol in this process. Artificial intelligence cannot acknowledge and understand the information obtained. The understanding and the interpreter are often the designer of the perceptron, not the perception itself. However, the designer's understanding and interpretation cannot replace the subject after man-machine integration. Each subject's understanding and

interpretation of the same thing must be relative, random, and unique. It must exclude the destruction of individual cognition by standard answers and authority concepts. At the same time, it is also the destruction of the absoluteness of human innovation ability.

Secondly, compared with the information evaluation subsystem, with the explosive growth of human access to information, the widespread of individual information and false information, and the rapid iteration of new ideas and theories, the uncertainty of knowledge becomes more and more prominent. The evaluation and screening of information are becoming more and more important. These evaluations include authenticity, precision (quality), logic (rationality of processing rules and methods), utility (value), and so on. The subject needs to learn to choose one or more items in line with rationality and logic among the many answers and opinions of the same question: always be rational and do not go to extremes and maintain a pluralistic and relative attitude. This requires an ability to comprehensively consider problems, an ability to surpass all problems, and think about problems from a broader perspective and a larger concept.

Finally, compared with the information construction subsystem, the work of this subsystem is the most critical and core subsystem of the information creation system. All kinds of creative and novel information are created through the activity of information construction. In deep learning and other “artificial intelligence” design methods, the design of “intelligence” is often based on the existing computer structure. Regardless of the input information, or the “decision-making” process (algorithm), or the overall architecture, it is based on the system of other organizations. If a system wants to act intelligent, it should have the characteristics of self-organization. All the creative information of intelligent agents comes from the emergence mechanism of a self-organizing system. This needs to focus on the cultivation of innovation ability in education.

From the brief analysis above, we can conclude that education of information creation is essentially a philosophical education; an educational model infiltrated by philosophical spirit, which aims to educate people’s spirit of freedom, doubt, criticism, and innovation.

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