Software Automatic Definition Software: probably the beginning of artificial intelligence replacing human beings

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Abstract

Artificial intelligence is a very hot research topic at present. More and more related applications are popularized in people's lives, and bring a lot of convenience to human beings. But there are also many people wondering whether artificial intelligence will have a negative impact on the future development of human society. This paper makes a further theoretical analysis on the research direction of software definition software, the combination of artificial intelligence and software engineering, and points out that a potential stage of software definition software: software automatic definition software, will probably be the beginning of artificial intelligence replacing human beings.

1 Introduction

Artificial intelligence is a very hot research topic at present. More and more related applications are popularized in people's lives, and bring many conveniences to human beings, such as: pipeline operation, unmanned driving, signal detection in dangerous areas, etc. But at the beginning of 2018, with the successive defeats of many world-class Go players, such as Kejie and Li Shishi, to AI, many people began to think: whether AI is conducive to the future development of human beings, whether robots will replace human beings, whether robots will threaten the survival of human beings, and so on.

Our understanding of current life is very clear: current human beings will not be replaced by artificial intelligence.

But our understanding of future life is not clear: future human beings may be replaced by artificial intelligence.

Between this clarity and uncertainty, there may be bridges leading to each other. This paper will analyze this and think that:

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2 Related work

Several ideas related to this approach have a long history.Many scientists have done a lot of research in recent years.Scott Reed & Nando de Freitas(ICLR 2016) proposed neural programmer-interpreter(NPI): a recurrent and compositional neural network that learns to represent and execute programs.Matej Balog et al. (ICLR 2017) developed a first line of attack for solving programming competition-style problems from input-output examples using deep learning.

At the same time, some scientists began to make theoretical exploration in this field.Professor Zhang Xiaodong, from Ohio State University in the United States, made a theoretical study of software definition software, and divided the software definition software into stages. In July 2018, Professor Zhang Xiaodong gave a lecture on Software Definition Software in China University of Science and Technology(Hefei, Anhui, China). The author of this paper has benefited a lot.

3 Software Definition Software

3.1 Backgrounds

Software design software is a new development in the cross field of artificial intelligence and software engineering. The reason is to solve the problem that the current training cycle of high-end software talents is too long and the supply exceeds the demand. With the development of science and technology, the shortage of high-quality talents is also growing. At present, science and technology are becoming more and more complex, and the technical requirements of talents are also increasing, which will lead to the prolongation of the talent training cycle (whether it is early entrance training or further education). Therefore, it is not only the low-end single-operation factories that use artificial intelligence technology to reduce labor costs; in some high-end industrial sectors, because of the lack of high-quality personnel (possibly a long training cycle), but also the hope of introducing artificial intelligence. With the rapid updating of the computer industry, high-quality software developers need to master a variety of programming techniques and computer architecture. For example, there has been a hybrid system of GPU and CPU. According to the current trend, the future system may be compatible with various chips, and the requirements for programmers are also increasing. Software Definition Software is a solution to the shortage of senior programmers.

3.2 Functions and phases of Software Definition Software

According to Professor Zhang Xiaodong's speech on the Longxing Project in July 2018 at China University of science and technology(Hefei, Anhui, China), software definition software will include three stages: (1) automatic programming; (2) automatic optimization; (3) automatic debug. In the first stage, the automatic writing program is divided into three levels: level 1: a basic level, searching, and assembly. Level 2: create new building blocks, and write some new functions. Level 3: abstract and summary requests, machines can complete human abstraction, summary needs. For example: Level 1: Find out the maximum of a set of numbers. Level 2: According to the formula or function provided by the user, write a function that meets the needs, such as selecting the sixth power of the maximum and minimum values in the group, Level 3: Users ask for the needs, and find the most beautiful number in the group. From the current point of view, the third problem is an abstract and summative one. The computer needs to analyze the characteristics of users through data mining, so as to get the answer.

Current research focuses on the first stage: automatic programming. The key points at this stage are: (a) defining methods, getting results from input, defining methods of problem and solution space, such as using DSL (domain-specific language) methods; (b) searching for known methods to satisfy conditions, so that programming problems can be transformed into search problems; (c) in-depth learning, looking for deep learning models of possible solutions 。 In the future, there may be further analysis of the following two stages. In the second stage, the main task is to optimize the program. The existing manual program optimization will waste a lot of manpower, and the computer can optimize endlessly in theory. In the third stage, there are also two levels, level 1: first need to understand, find UML; level 2: find hidden bugs in the software.

At present, most software design software has the following shortcomings: (1) lack of generality, the method of describing problem and solution space is domain-specific; (2) uncertainties, machine-generated solutions are still probability-based, and need to verify the program to confirm it; (3) sub-optimal performance, search space may be limited, resulting in poor performance. Solutions and the resulting solutions may not be the best.

3.3 Development of Software Definition Software

In the current software definition software research process, in order to promote the progress of this research, these methods can be adopted. Using Logics to build learning models; using mathematical tools to reduce the possible search space of SDS, such as Z3 and Coq, can help machines avoid unnecessary search space; building learning materials/courses, humans can use existing human programming software as textbooks and examinations to teach machines; building software building blocks, computers can use existing software Frameworks, programs, libraries, etc. are used as building blocks for assembling

programs. With the further development of research, the specific links of software definition will be further refined, and there will be other research directions. This paper argues that the process of software automatic definition may occur.

4 Software Automatic Definition Software(SADS)

4.1 Concept of Software Automatic Definition Software

On the basis of SDS, this paper assumes a scenario from the user's point of view: there are two people, one is the superior, the other is the subordinate. Superior according to customer requirements, design needs analysis, extract tasks, and then to the subordinate to do; Subordinate to SDS mode, by computer programming, after completion to the superior, the entire workflow is over. In this case, human work has been greatly simplified, and the remaining functions are to refine the problems to be solved and assign tasks. At this time, the human role of the subordinate is basically dispensable. Can we imagine that the computer can spontaneously design needs analysis and extract tasks? This is the SADS introduced in this paper.

Software automatically defines software.

According to the classification of SDS, we can set "Computer Spontaneous Design Requirement Analysis, Extraction Task" at the fourth level of the first stage (Level 4), or the fourth stage of software definition as a whole (in terms of process, this should be Phase 0): the software will analyze the requirements and design the functions by itself.

It's like in a company where humans were originally responsible for writing project plans and software was responsible for completing them. But now the software can complete the project plan by itself and carry out subsequent development. In this case, humans are completely stuffed into the trunk.

Do you remember the superiors and subordinates mentioned earlier? In this case, from a technical point of view, only the task of inspection is left. In this case, there will be some problems: such as environmental protection. The research on environmental protection is beneficial to human development. The software can also be developed automatically, find needs automatically, assign tasks automatically, and design corresponding software. From an objective point of view, as one scientist said, the current greenhouse effect, only for human beings, carbon dioxide concentration is 100 times higher than the current situation has also occurred, but the earth is no problem, so the greenhouse effect is to protect human themselves. But once the machine has the ability to find and solve problems, they analyze the problem from an independent perspective. The goal of the computer is to save the earth, or for the development of the computer itself, because without the earth, the computer itself can not develop. Then, through high-level analysis and calculation, the computer finds that human beings are destroying it. Earth, this is the beginning of a tragedy.

In fact, automatic problem-finding is a kind of artificial intelligence humanized enlightenment. Machines operate according to the needs of real life, that is, to set up a mechanism for software, which can automatically discover and distribute what to do. This is not an alarm clock, repeating or doing what human beings have designed. If the machine searches for tasks and solves problems on its own initiative, it may be a potential possibility for AI to run out of control.

4.2 Stage of Software Automatic Definition Software

Software automatic definition software, there are the following stages:

(1) independent software systems, artificial intelligence to run, such as navigation machinery dog, automatic driving. These systems or devices already have a relatively complete system, although it can also be controlled by human beings, they have the ability of autonomy. And these systems will have some emergency response in order to consider emergencies. The emergency settings are manually analyzed by programmers to ensure that the steering wheel of the car is still in human hands.

(2) According to the settings of existing software or scripts, computers can default to some operations. These operators are not entirely clear to the programmer or use some default settings, then the computer can do some default operations.

(3) The computer will automatically design the software according to the requirements. Programmers don't look at specific statements, and although they know their functions, they don't have time to sort them out sentence by sentence. It's like a black box. Programmers know input and output, but they don't know the details inside.

(4) The computer can generate software purposefully. At this time, human beings do not necessarily know its purpose, but the computer operates in the background by default.

Software automatic definition software, the key is part of the software program, design, so that they can find their own problems to solve, and then synthesize the previous several steps, after a master program began to operate its programming, he can realize the functions that have been introduced at present, start to analyze their requirements, and symbolize their requirements, such as the "search" mentioned earlier. Find the most beautiful number in a group, and then further refine and abstract, so that the software can complete the process of self-design software, the key is that the software itself to find problems, that is, people have been lazy.

If it has been developed to the fourth stage of SADS mentioned in this paper, human beings only know that the software is running automatically, generating new software automatically, and running through the network, this is already an Austrian creation in Manwei, not a metaphor. Therefore, software automatic definition of software is a very dangerous thing for human beings.

Software Definition Software (SDS) is a solution for human beings to cope with the current data age and the long training cycle of talents. Technology is the result of lazy people's thinking, but like kites, people must hold this thread in their hands, otherwise, it will float away. From the current point of view, this article is still only a kind of alarmist, is an unrealistic guess, but there is theoretical support for this article, as well as the discussion of the future. Therefore, it is worth in-depth analysis.

5   Conclusion

In this paper, the concept of SDS, some more in-depth thinking, proposed SADS. According to the development trend of artificial intelligence and software engineering, this paper expounds the concept of software definition software, makes a further assumption of software automatic definition software, and discusses the possibility of its development. This paper holds that automatic software definition is likely to be a turning point for artificial intelligence to replace or threaten human beings. Software automatic definition software is a more in-depth theoretical analysis of software definition software, which is a purely theoretical analysis, so there are still many places to be filled.

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