Application of Machine Learning Under Big Data to Innovative Exploration

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Abstract

Under the background of big data, education is undergoing changes. Artificial intelligence is a typical product of big data. The innovation of education is guided by artificial intelligence and intelligent education. It is a hotspot to analyze large data and predict education accurately by its attributes. We extract a branch of artificial intelligence - machine learning, using its ability to meet the needs of large data analysis and prediction of education, from different levels of its application and innovation to explore in detail.

Keywords

Big data; machine learning; artificial intelligence; education big data; education innovation; personalized learning.

1. Introduction

In the era of big data, the intelligent revolution is following the trend. In the 2017 cross-year Go war, chess player Master won successively over many world-class top chess players in China, Japan and South Korea, which can be said to be a miracle event in the history of artificial intelligence (AI). Google advanced automatic driving vehicle, through the intelligent driving device in the car, put the theoretical proof of the book into practice. The United States report points out that artificial intelligence has entered the third wave, that is, "interpretive and universal artificial intelligence technology" era. If AI can be rapidly promoted, this will require "machine learning" (ML) hot technology.

Under the guidance of big data, the development of artificial intelligence is also changing. First, a new field has begun to take shape, which combines the artificial and learning sciences and is called Educational Artificial Intelligence (EAI). Second, under the guidance of intelligent education, the educational informationization of innovation and development is steadily advancing, which has led to the innovative development of education and teaching, and this field has gradually become an information age. Trend.

In the educational role of reshaping technology, it has mainly expounded in three aspects. First, in the learning part, through the mobile data collection and online collaboration platform to support the realization of personalized learning services for students. Second, in the leadership part, effective leadership focuses on students'personalized learning, through technology, students' personalized learning path. Third, in the evaluation part, through the collection of summative and formative data, personalized digital learning experience gradually formed. Therefore, through the collection and integration of data to support personalized learning, which has gradually become an inevitable trend, but these have the most important premise, that is, the application of artificial intelligence technology, it is the key to maximize the value of data.

At present, the most popular technology in the field of artificial intelligence is machine learning, which can predict the students'learning performance by automatically identifying data. On this basis, intelligent education and personalized learning can be realized. At present, there is no systematic research on the educational application of machine learning. This paper mainly elaborates the

development status, progress and challenges of machine learning education, and combs it into a certain system to provide theoretical basis for its application in more aspects.

2. The Current State of Machine Learning

In recent years, sensors and connectors have been widely used in large data environments, and the amount of data produced each year can be measured by "zerobytes" (ZBs), which means hundreds of ZBs of data are generated each year. Usually, large data can not be packaged into memory, so we face a new challenge, that is, how to extract large data from complex, real, cluttered and schemaless environment for use. Under the existing conditions, machine learning research on large data mainly takes the form of "classification, large data divide and conquer strategy and sampling, clustering, feature selection and association analysis".

3. Machine Learning and Intelligent Education

Under the condition of educational informationization, the wisdom education of technology intermediary is the new demand at present. The core goal of intelligence education is to implement teachers'efficient teaching methods and personalize learners' development experience and learning services in an environment of technology integration. In the environment of intelligent education, collecting learners'data and integrating them into large educational data need intelligent means to excavate the potential knowledge system and promote the innovation and development of intelligent education. The essence of machine learning is to use computers to learn rules from large amounts of data and automatically discover new patterns for innovative prediction. Therefore, it is a general trend to use machine learning to help intelligent education to understand learners'learning deeply.

Compared with traditional education, the process of machine learning has changed a lot. Machine learning mainly acts on the process of education data mining, which integrates the process of education and data mining. In the large amount of data collected, data mining, development and research are applied to the field of computer methods. Education data mining involves many disciplines, including pedagogy, computer science, statistics and so on. Machine learning, which combines computer science and statistics, plays a strong supporting role in the mining of educational data. The pattern diagram is like 1.

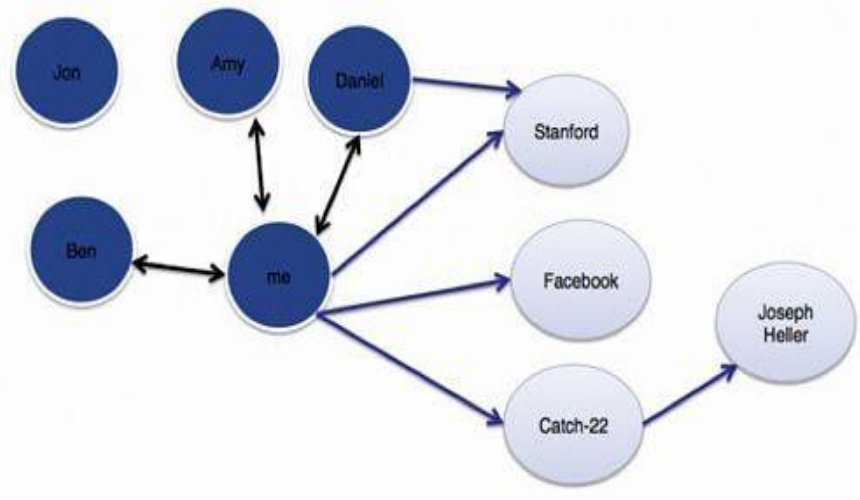

Fig. 1 Multidisciplinary education data mining

In the field of education data mining, machine learning plays a major role in data mining and interpretation. It explores new knowledge and patterns through data analysis, and ultimately realizes the functions that are lacking in traditional education or difficult to accomplish by human. In the part of data interpretation, the discovery of patterns and new knowledge mainly uses machine learning to establish prediction and description models, so as to realize the model prediction of new data. For example, analyze and predict students' achievements.

4. Potential for Machine Learning and Educational Application

Machine learning is an analysis technology of data mining. In 1995, data mining began to be applied in the field of education. It is speculated that the study of machine learning began in 1995. However, in the literature review process found that a large number of documents for machine learning began in 2010, before this on this aspect of the literature is few. From 2010, the study of machine learning abroad is mainly based on the application of machine learning in specific education cases. Through the above-mentioned survey and summary of machine learning, I hope this framework can be used by educators, teaching and research personnel to help them further explore the development of machine learning in education. Under the background of big data, we can truly realize the wisdom education of machine learning.

In the machine learning simulation system, the environment refers to the external information.

The source of body is mainly to provide corresponding information for learning. Learning refers to the learning mechanism of the system itself, which is similar to the short-term memory in the information processing model. It mainly searches for the external environment, obtains knowledge through corresponding analysis, analogy, synthesis and induction, and then stores this part of knowledge into the knowledge base. In the processing information processing model, the function of knowledge base is basically the same as that of long-term memory, which needs to be executed according to the organization in the process of storage. Similar to the reactor function in the information processing model and the function of reflecting generator, it mainly deals with the actual problems faced by the system, that is, through the use of the knowledge learned, the problems that could not be solved originally. In addition, from execution to learning, there is a feedback of information. Through information feedback, learning determines whether or not it is necessary to obtain information from the environment to learn knowledge, so as to modify and improve the knowledge in the knowledge base. In short, we should stand on the philosophical point of view, from the original perceptual material to rational material leap, so as to guide practice in the process of leap.

The continuous development of science and technology has promoted the rapid development of online education.The emergence of intelligent network education is also the most desirable, but no matter what kind of intelligent teaching, can not avoid the use of machine learning technology, such as intelligent teaching from the original learning of a large number of questions in the same answer to classify students'problem-solving style, it requires the use of machine learning technology. Therefore, in the intelligent network teaching, we can use many technologies in the field of machine learning, such as statistical learning, neural network, data mining, inductive logic programming and so on. The so-called network distance education is through online problem solving, through the analysis of the answer, we can summarize the students'existing knowledge structure, which is inseparable from the support of machine learning technology, but also need the corresponding use of induction algorithm.

References

[1] Huang Fu Zhong min, Yan Heng Heng, University non professional computer basic teaching. Discussion on reform [J]. Journal of North China Institute of water conservancy and hydropower, 2010 (1).

[2] Wang Lixin, some thoughts on computer basic teaching [J]. computer knowledge Knowledge and technology, 2011 (25).

[3] Liu Heng. Analysis and reform measures of computer teaching in UniversitiesExplore [J]. intelligence, 2012 (2).

[4] Feng Lixing. On the teaching of computer application foundation course in Universities Method [J]. computer knowledge and technology, 2012 (33).

[5] Gong Bingzheng. Retrospect and Prospect of computer application development in China [J].Automation Expo, 2013 (11).