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Ethical Risks and Regulations of Big Data Technology

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Abstract

The advent of the era of big data has brought extensive and profound impact on mankind. The characteristics of large volume, high speed, diversity, and accuracy of big data are leading profound changes of human society. However, with the unprecedented development and utilization of big data technology, many disadvantages have gradually emerged. People's information privacy is fully exposed under the data analysis technology, the "Matthew Effect" caused by the unfair risks contained in the relationship among the providers, collectors and users of data wealth gradually emerges as well as the understanding limitations of the big data analysis model brought to people are potential technical and ethical risks. How to get out of the shadow of technology and make technology can better serve human beings important answers that we urgently need to explore.

Keywords

Big data; ethical risks; regulation.

1. Introduction

When technology is increasingly becoming an indispensable element of human production and life even for a moment, technology naturally becomes the master of humanity, although technology itself is neutral, we cannot make ethical evaluation for technology itself, but because technology is always used by different people, so the emergence of every new technology often means potential technical and ethical risks. Nowadays, as the era of big data is approaching, it is of great practical significance for us to understand the ethical risks brought about by the development of big data technology.

2. Potential Ethical Risks of Big Data Technology

(1) The underlying apprehension of "transparent people"-the privacy protection problems brought by big data

The problems of privacy protection brought about by the development of big data technology have always received widespread attention from the scientific and technological circles and society, people become no privacy in front of data analysis technology, people become "transparent people", as a free individual, human existence are challenged. The threat posed by big data technology to personal privacy protection mainly comes from data analysis technology based on data acquisition.

Since the mid to late 20th century, with the development and maturity of computers and related technologies, human information collection, storage and processing capacity have been continuously enhanced, and all information is useful data under the background of big data technology. According to the different main bodies generated by data, the sources of big data mainly include the following types: the first is from various types of data generated by people in the Internet activities and the use of mobile Internet, including text, image, video and other information; the second is from the data generated by various computer information systems, which exist in the form of file, databases, multimedia, etc., and also include log and

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automatically generated information; the third is the data collected from various digital devices, including the numeric character generated by various cameras, various data generated in the medical Internet of things, etc. [1]According to the report provided by the famous information industry consulting servicer IDC, the total amount of global information in 2012 has reached 2.8ZB (1ZB=1024EB), and it is expected to reach 44ZB in 2020. According to statistics, 2 million users use Google search per second, Facebook users share more than 4 billion things every day, Twitter processes more than 340 million tweets every day, moreover, monitors and cameras throughout cities, credit cards and Alipay used in hotels, hospitals shopping malls and on the Internet every day, personal information widely registered in the government and the school community will generate a lot of data. Therefore, it has become an overwhelming reality that human has entered into the era of big data characterized by explosive growth of information.

Obviously, the privacy of people living in the era of big data is being threatened by various types of information collection technology, and the individual secret space is being squeezed by various technological means to become smaller and smaller. The privacy right is one of the basic rights of people; privacy is an important manifestation of individual personality independence, privacy protection is the basic idea of modern rule of law and the basic orientation of ethical values. Qiu Renzong, the Institute of Philosophy, Chinese Academy of Social Sciences, divides privacy into three categories, the first is body privacy, which is person's body privacy and cannot be exposed to the general outsider; the second is space privacy, it means keeping a certain distance with people who are not intimate; the third is information privacy, which is the protection and control of personal information, including individual existing feature, acquired characteristics and personal preferences. [2] In addition, in fact, privacy should also include behavior privacy, individual behaviors that occur in daily social behaviors and are not willing to be known by others, such as walking in the forest, resting by the lake, and drinking alone in the mountains. However, in the era of big data, we will find such a ruthless fact, it has become more and more difficult to prohibit "publish and publicize the privacy of others", and the danger that people will become transparent people in front of big data technology is close at hand.

(2) Sloping balance-unfair risks in the data gap

In the era of big data technology, data is not only the information form expressed by writing, but also becomes the symbol of wealth and strength, however, the unfair risks contained in the interrelationship of data wealth providers, collectors and users has appeared in the development process of big data technology, there is data gap between different groups and individuals, and among countries, showing a typical "Matthew effect." According to the "21st Century Business Herald", according to the "2013: Hardware Reconfiguration and Software Definition" report published by ZDnet-cloud technology the top portal cloud data center, China's existing data capacity is about 5EB (Exabyte Exabyte, 1EB=1024PB), at present, there are more than 3 million servers in operation; while the total number of servers in operation worldwide exceeds 50 million currently, and the overall capacity of servers in the United States is close to 10 million. Although China is the world's largest country in Internet, computer, and mobile phone users, China's servers are less than 1/3 of the United States. China has lagged behind developed countries in information ownership. According to the storage report analysis of IDC (Internet Date Center) of the McKinsey Global Institute, China’s additional data volume in 2010 was 250 PB (PB: Petabyte, 1PB=1024TB), Japan is 400 PB, Europe is 2000 PB, North America mainly is United States with 3500PB.

In the era of big data, data is actually not open to everyone and all companies, only those companies, enterprises, government departments, and individuals with data acquisition and analysis capacity have the right to occupy and process data, a large number of data producers cannot enjoy the data or process the data. Taking the social media Facebook as an example, according to the report of Tencent Technology reprinted from BI Chinese website on July 25, 2014: the number of messages sent on the Facebook platform is up to 12 billion every day, and

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the number of monthly active users reaches 1.3 billion, there are 1 billion search commands executed on Facebook every day, about 1 billion people use Facebook on their phones, and about 827 million people use Facebook every day, on the Facebook platform, the number of followers of public figures is about 800 million, 650 million people use Facebook on mobile devices every day, 1.50 million companies put up paid advertisements on Facebook. In fact, only companies like Facebook can have real acquisition and storage capacity for such huge social data, and only a few people can use these data.

(3) Alienation of self-confirmation-digital life and life

The "dustbin problem" is used by Evgeny Morozov in "To Save Everything, Click Here" to show that the beauty and freedom in life are being ubiquitously recorded by digitization, namely by installing a micro-smartphone on the inside cover of the dustbin, every time someone turns it off, the micro-smartphone takes a photo, then analyze and evaluate the photos collected in the dustbin and answer such questions: how many items are there in the photo? How much is recyclable? How many foods are there? When this data is added to the photo, it is uploaded to dustbin owner's Facebook account and can also be shared with other users. The inventor of this technology hopes that once this smart dustbin can enters thousands of households, Facebook can be used to turn taking out the garbage into exciting games like games. Each dustbin counts accumulate points once a week, when the food waste and recyclable materials in the dustbin are reduced, this family will earn gold bars and leaves. Whoever earns the most gold bars and leaves will win.

The "dustbin problem" asks several questions, Should we let one group of citizens do the right thing under the supervision of another group of citizens? Should we introduce game incentives into a process that previously resorted to responsibilities and obligations to play a role? Can a person's "goodness" in environmental protection behavior be accurately quantified by leaves and gold bars? Should its quantification be separated from other daily activities? If you don't drive, can you not sort the garbage circularly? Will larger-scale public supervision of one's dustbin lead to the spread of ecology alertism? If the participants' Facebook friends stopped looking, would they stop doing the right thing?

3. Walk out of the Shadow of Technology-Regulation of Ethical Risks of Big Data Technology

First, the government and society need to form a good system and culture from a macro level, provide a good social environment for the development of big data technology.

As a new technology, the emergence of big data technology is an important symbol of the transformation of human society from knowledge society to intelligent society, so it has been valued by developed countries represented by the United States from the beginning. The United States is the first country in the world to focus on big data. In March 2010, the US government required each department to implement its own big data strategy. In December 2010, the US Presidential Science and Technology Advisory Committee issued a report entitled "Digital Future Design: Jointly Fund Research and Development of Network and Information Technology", highlighted the dilemma of control and utilization caused by the explosive growth of data, and recommended the US government gives priority to the development of big data technology. In March 2012, the US government proposed the "Big Data Research and Development Initiative", formally launched the "Big Data Development Plan", which planned to conduct scientific and technological breakthroughs in scientific research, environment, biomedical and other fields with use big data technology. This plan of the Obama administration is regarded as another major measure of the US government in the information field after the information highway plan [3].

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In 2015, China issued the "Action Outline on Promoting the Development of Big Data", which aims to use the new generation of information technology such as big data, cloud computing, the Internet of things, and the mobile Internet to promote the upgrading of traditional industries, drive the development of emerging industries and foster new economic growth points. Although many countries in the world have begun to attach importance to the development and application of big data technology, the supporting laws and regulations have not kept pace with technological progress. The social communication is a non-face-to-face and non-contact form communication under the environment of big data technology, this requires the government and society to establish and improve information laws and regulations, use the legal "heteronomy" to regulate and restrict the information activities of the information actors in conformity with ethical and moral standards, require that the implementation main body of scientific and technological behaviors bear the responsibility for scientific and technological risks caused by improper behaviors, promote the orderly development of science and technology, drive the better integration of science and technology and society, and jointly guarantee the good operation of social order.

Secondly, enterprises engaged in R&D and promotion of big data technology need to have due responsibilities in the ethical constraints of technology improvement and promotion from a meso-level, so as to ensure the good development of technology development and application.

With the widespread popularity of the Internet, the number of netizens around the world has reached a considerable scale, people in daily production and life cannot avoid contact with the Internet, and then a lot of private personal information will be "expropriated", forming part of mass data. Scientific computing, medical and health care, finance, retail and other industries also have a large amount of data that is also constantly being generated. A large number of facts show that the improper processing of big data will cause a great violation of user privacy. The threats people face are not limited to personal privacy leaks, what is more, are the predictions of people's state and behavior based on big data.

At present, the protection of data security and privacy is still in industry self-discipline state, it is difficult to ensure data security and privacy to a certain extent. Therefore, enterprises engaged in R&D and promotion of big data technology need to have due responsibility in ethical constraints of technology improvement and promotion, so as to ensure the good development of technology development and application, establish the correct scientific and technological ethical risk awareness in the development and promotion of big data technology, provide strong ideological support for scientific and technological risk management, and encourage scientific and technological workers to use the correct scientific and technological philosophy to guide scientific and technological activities. Moreover, we must vigorously carry forward the ethics of science and technology in the research and development, and promotion of big data technology, constantly improve the ethical awareness of big data, and strengthen the moral self-discipline of the main body, control the negative effects of big data technology and improve the ethical and moral level of the main body of big data research and development, moreover, the moral value and the ethical spirit of big data technology must be integrated into the whole process of data acquisition, storage, dissemination and use, make security, reason, justice and harmony become the basic moral value of the development and application of big data technology, thus ensuring the good development of technology development and application.

Third, at a micro level, as a culture, the good development of big data technology requires the conscious identification and active participation of all social members, and then builds a good cultural atmosphere that promotes technology to serve humanity from the cultural level.

The development of big data technology has been applied in many fields to this day, but the public's understanding for big data itself is not enough, so they have bias for the attitude of big data technology, there are two main attitudes: one is to exaggerate the advantages of big data technology and ignore the risks of technology application, the second is to give up eating for

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fear of choking, exaggerate the risk of big data and produce resistance to the development of technology; these two attitudes are not conducive to the good development of big data technology. As a culture, big data has begun to affect everyone's life, and it also requires the active participation of the public.

As a new technology, as long as we obey the laws of technological development; abide by the basic principles of ethics and morals, make the technology always develop on the track of serving humanity, we will on the threshold of new changes and new opportunities brought by big data technology. Moreover, each member should enhance the idea of personal privacy protection in the big data technology environment and establish sense of data right protection. In the era of big data, only by making users firmly establish clear information privacy idea, can we prevent the intrusion of personal information and reduce the ethical risks of big data technology. The protection and right protection of public personal information is also an important aspect of reducing the risk of big data technology, when facing the leaks of personal information and data, users should promptly make an appeal to the data management department.

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