

## The Judicial Judgement in China Today

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**Abstract:** Cognition is the most insurmountable obstacle of artificial intelligence system. In the field of justice, human language is complex, and the investigation of facts and the adoption of evidence require judges to use their experience in daily life, and many personal factors are often introduced into it. Therefore, the constructive understanding of human judges plays an important role in the process of trial. In addition, the professionalism of legal language and the political color of judicial judgment have also deeply hindered artificial intelligence system judge independently in trial. A fully autonomous judicial trial is beyond the reach of artificial intelligence systems. Artificial intelligence system reconstructs the roles of appraisers, expert assistants and other trial participants, and also changes the knowledge structure and number of members of trial teams. In addition, it will have a great impact on the supervision and assessment system of judges. However, if the artificial intelligence robot could replace the natural person judge completely and independently in the future, human beings should welcome rather than reject its application.

### 1. Introduction

In recent years, the application of global artificial intelligence robot in the field of justice is increasingly extensive [1]. Robot judges, known as Advanced Case Management judicial assistance systems, have long been introduced by IBM, based on data storage and process management, it automatically decides cases through comprehensive analysis and generates optimized the result of the referee [2]. Now, an artificial intelligence robot that could adjudicate cases has been developed by London university. For all 584 cases involving privacy, insult and torture that could be judged by the European court of human rights, by evaluating legal evidence and considering ethics, it can predict the outcome of the judgment with an accuracy as high as 79%, and then decide how to judge the case [3]. In 2014, truth north, a bionic chip that imitates the human right brain (environment, smell, sensation, vision and other functions), was developed by IBM. Artificial intelligence has also been demonstrated could be capable of autonomous learning by Cornell university laboratories [4]. In 2016, “rui judge”, an artificial intelligence case research and judgment system, was introduced by the Beijing high court [5]. Obviously, the artificial intelligence in judicial judgment could help reduce the workload of judges, promote same cases and same judgments, improve work efficiency, and even fundamentally reduce the influence of external factors, to promote justice in trial.

Although has many different human brain and computer programming, but the supporters of artificial intelligence believed that confidently all the understanding of the real could form appropriate programming, and be expressed by a computer system, and the operation symbol generated by the formal rules could direct the computer, helps the human in the judicial referee, even realize criminal justice in a way that is similar to the vending machine independently [6]. Artificial intelligence means that the intelligence of computer systems comes from human beings, rather than thinking, learning independently and innovating. In other words, the meaning of this word is the simulation of human thinking from computer systems, including the functions of judgment, thinking and learning. As for the implementation path, it also includes the programming technology of simulated neural network algorithm and the programming technology based on logic; In terms of operation mode, the general procedures of artificial intelligence system are: (1) recognizing language (including spoken and written language); (2) finding problems; (3) evaluating the meanings of problems; (4) reasoning based on algorithm or finding various possible solutions; (5) finding optimal solutions based on algorithm. Therefore, the artificial intelligence judge has the

broad sense and the chivalrous sense. In the narrow sense, the artificial intelligence judge refers to the artificial intelligence computer that can carry out the trial works independently like the human judges. In a broad sense, artificial intelligence judges also include various auxiliary systems of judicial judgment affairs, such as law and case retrieval system, evidence analysis system, trial record system, judicial process tracking system and judgment document generation system. At present, the judicial system in the world only introduces the human auxiliary intelligent systems, rather than the computer system that completely operates the judicial judgment. Artificial intelligence system brings unprecedented convenience to human beings in the aspects of retrieval, calculation, memory and other repeatable operations.

As American scholars Phil Mc Nally and Sohail Inayatullah predicted, robots may become “alive”, an electronic judiciary may also be created to replace the existing courts, however, can be extracted from the trial scene and related material legal data, evidence, can be analyzed using legal logic and the applicable law of artificial intelligence can judge must be fair to judge? Can an artificial intelligence judge who can extract legal data from trial scenes and relevant materials, analyze evidence, apply legal logic and apply law, be sure to make fair judgments? Do uniform judgments meet our need for individual justice? Sometimes, the judgement of the case does not depend on the law of art, and more depends on the experience of everyday life, depends on the cognition of human nature and Humanitarian ideas, belief in the rule of law, even for the understanding of ethics and values, intuition and language, consciousness and emotion, love and faith, so, the judge---artificial intelligence can do? This article will take this as the cornerstone, discusses further the transformation of judicial trial pattern on the artificial intelligence age.

## **2. Investigation on the elements of the artificial intelligence auxiliary system for judicial judgments**

At present, the artificial intelligence system in the field of judicial judgment is only a kind of auxiliary system. However, examining its characteristics and analyzing its operation mechanism could lay a foundation to analyze further its operation in the field of judicial judgment for us. It helps judges to improve their trial effectiveness by replacing repetitive and simple labor.

### **2.1 Assist system**

It is based on the case systems of the court of appeal in British Columbia, the United States lower and higher courts as a database, and the federal sentencing guidelines. Its interface could achieve many functions. After opening the system, select a legal field in turn, such as criminal law; choose an illegal act, such as robbery; describe the behavior simply; you could then use either of the four scenarios that follow from the figure above.

### **2.2 Sis system**

Sentencing Information System is aimed at same-case-same-sentencing and sentencing consistently and continuously. Its usage is similar to the ASSYST system, except that, it needs to input more information, including, as shown in the Figure 1:

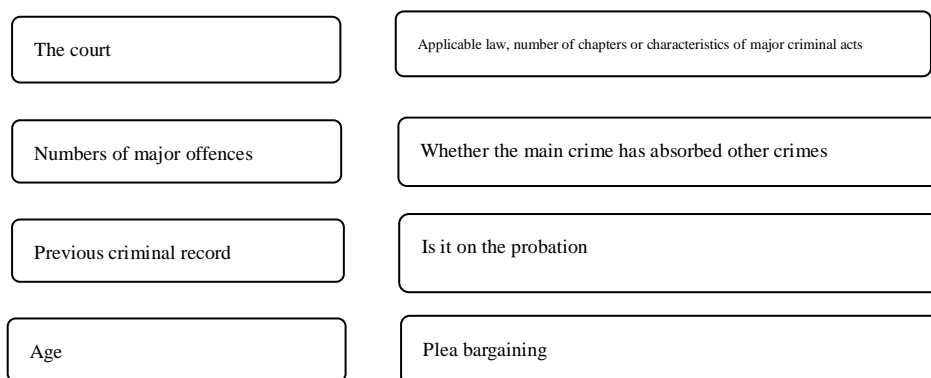


Figure 1 The more information which is needed by sis system

When the above information is input, the system will provide relevant statistical information.

### 2.3 The commonality of artificial intelligence auxiliary system

Through the analysis of the working principles of the above two systems, we could see that the working principle of artificial intelligence auxiliary system is to dig out the various elements of the case, give a variety of algorithms, and then through the addition, deletion and change of these elements to achieve the comparison and reasoning with the new case. In other words, what the judge should do is to summarize the characteristics of the cases and use the system to compare the cases, so as to decide the pending cases.

However, the combination of these elements is numerous. Taking the criminal record as an example, there are many elements in the case, such as time, behavior, place, object of attack, whether violence is used, whether is recidivist, nature of the case, whether recidivist, whether have confession, whether have surrender and whether have meritorious services. There are 3628800 ( $10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$ ) permutations of these elements alone, which require human judges to assign weight coefficients and permutations to achieve interpretation. If such cases have not happened in the past, then how does the artificial intelligence system realize the research and judgments of new cases?

Comparing these features, we could find that the artificial intelligence system needs to work according to the details. However, apart from the above obstacles, could it have or not violate the discretion of human judges? Clearly, the answer is no. The following paragraphs will analyze these issues in detail in the context of judicial adjudication.

## 3. Disassembly of judicial judgment

For the computer system, it is not difficult to complete the addition, subtraction, multiplication and division of dozens of digits in a moment, but it is not easy to ask it to determine the nature of the case. The link between computer technology and the real world can only be realized if the computer could understand accurately the natural language in the case and estimate its various possible connotations, which is exactly the biggest difficulty of artificial intelligence technology. In the process of adjudication, judges often refer to the established cases, but the link and difference between pending cases and existing cases is a necessary process. To realize this discrimination, it is necessary for the computer to calculate the similarities and differences between the two, design the corresponding data on this basis, and complete the corresponding data input and output, so as to achieve the final information terminal processing. So, could this recognition technology be implemented?

### 3.1 Language, experience, and parameter assignment

In the view of scholars advocating legal formalism, “legal reasoning should be based on objective facts, clear rules and logic to solve all specific behaviors required by law. If the law works

in this way, legal reasoning will lead to the same decision, no matter who makes it". If this "if P then Q" logic can be established in the judgment of the cases, then, as long as the artificial intelligence computer obeys this logic, it could extract data from the case, and use the data to calculate and reason, demonstrate and explain, to achieve the judgment of any judicial cases. However, this assumption assumes that the judge's decision of a case is not affected by personal subjective factors. It regards judicial reasoning as a kind of mechanical operation schema and ignores the important factors that influence the judgment of AI computer: the identification of case factors and the weight coefficient arrangement of these factors.

As Hod Lipson said, the unique "consciousness" of human beings is something that artificial intelligence systems could not possess [7]. Language is the external manifestation of human consciousness and an important function that distinguishes human beings from things. Its complexity is also reflected in the judicial field. In this field, some original language rules are difficult to be used, and they are often reflected in the form of loose definitions and open semantics, even some of them gradually become new languages, such as the change of "little miss" semantics in China, or the language that is not included in the official dictionary in many dialects. All these make standard language in the text may appear many changes at any time, so that the difficulty of artificial intelligence to recognize many life scene language is much higher than the input of standard languages. Different from go and other specific tasks, the difficulty in realizing regularization and logicalization of human language cognition has always been an insurmountable obstacle for artificial intelligence. But this kind of recognition technology must use the induction, the deduction and so on reasoning way and the standard interpretation, the situation analysis and so on many kinds of thinking way. This kind of recognition technology must use the induction, the deduction and so on reasoning way and the standard interpretation, the situation analysis and so on many kinds of thinking way, and these are exactly what artificial intelligence computer is difficult to achieve.

For example, in a traffic accident, the defendant zhang mou was prosecuted for violating traffic rules and killing one person and injuring several others." The letter about traffic accident responsibility" think, zhang bears main responsibility for this. But the defense argued that there were major flaws in the main facts on which the letter was based, and that its main evidence -- the video at the scene of the traffic accident -- was so vague that it was difficult for ordinary people to identify it. At the same time, zhang had unilateral evidence that he was driving "from north to south" rather than "from south to north" as stated in the letter. After many people observed, they all believed that the video could not prove any questions, and at the same time, they also believed that zhang's reasons were reasonable.

Both arguments require judges to judge the truth or falsity of it, based on their daily life experience and decide whether the arguments are valid or not. Therefore, the judge of artificial intelligence needs to select the factors that affect the judgments and input them into the program in an appropriate form. After that, the judge needs to convert these factors into numbers to express their connotation, assign values with different weights to them, and set some operational schema, so as to calculate the judgment result finally. The obvious question, however, is whether it makes sense to convert these factors into Numbers, how the weighting coefficients given could be considered accurate, and how well the equations are designed could be considered opportune. In addition, the decision on whether video can prove criminal facts and whether the defendant is driving illegally plays a decisive role in the judgment. If the human judge lacks life experience, it will be difficult to judge, so the artificial intelligence judge could easily calculate whether to adopt it? If these problems are not properly solved, artificial intelligence judges will not be able to achieve the same independent trial as human judges.

### **3.2 Constructive understanding and professionalism of legal language**

In the process of judging cases, judges do not automatically understand the information of cases, but always mix many personal factors intentionally or unintentionally. These factors make human judges constantly interpret, reconstruct and reconstruct all kinds of information influencing cases in

the process of constructing the system of case judgment. For example, a and b have sex, and then a and b walk out of the room with cuddling, and the woman even makes intimate gestures to the man. In this regard, we will build a relationship based on our daily experience and infer that the woman has consensual sex with the man. The AI judge, however, ignores these scenarios and only makes judgments based on the scene of instant sex between the two partners.

Constructive understanding plays an important role in the process of trial. A large amount of evidence is presented in fragments within a limited period of trial; Different witnesses and types of evidence prove different facts to be proved, and these facts are likely to be interval, it is not always consistent or in causal order in combination. For this reason, both the prosecution and defense parties and the judge in a criminal case have their own understanding model for the cases, and the understanding of the prosecution and defense parties is often contradictory. What the judge should do is to listen to the opinions of the prosecution and defense parties and then construct his own understanding model. Whether the evidence is related to the case depends on the causal relationship; the judgment of causality requires reasoning, which is based on daily life experience and legal knowledge and connected by logical rules [8]. At the same time, the situational schema constructed in the judge's mind is often diversified, and the final decision is to use only one. This choice is based on the judge's trust, which is difficult to represent by the size of the numeric value. For example, "the defendant has stolen many times" could increase the judge's confidence on that the defendant's stealing again, while "the defendant has a good character and has never committed any crime" could reduce the judge's confidence in the defendant's stealing. That is, the judge has interpreted and constructed the context before judging the evidence. In this context, judges begin to apply integrity, consistency, and acceptability to identify evidence. Acceptability means that the evidence could be understood and accepted by the judge; Integrity refers to the fact that each part of the case has the corresponding evidence to prove, and the split has the great possibility of "causing and covering up the inconsistency of the system". Consistency refers to the fact that all parts of evidence could be logically linked together to form a closed chain of evidence. The judge will try to find the evidence that meets these requirements, but the reality is often presented in an incomplete form. Therefore, the judge will weigh the best combination of evidence that could achieve these requirements, and then form a judgment.

The professionalism of legal language also makes it difficult for AI systems to match the situations in cases with the categories of legal terms, such as intent and negligence, as well as emotions, emotions, tendencies and motivations. Why? The identification, classification and matching of these phenomena are realized by human beings using specific self-cognition patterns (such as whether people have feelings or not) instead of machine language.

### **3.3 The political color of judicial decisions**

In addition to the above factors, sometimes the judicial judgment also has a certain political color rather than pure technical behavior. In the United States, there are "friends of justice". In China, factors such as social influence and decision of political party, have an important impact on the judicial judgment. These phenomena also reflects that judicial adjudication is never entirely a science of judicial technology, and these factors are difficult to eradicate in any country in the world, and in some cases even have a positive social impact, rather than passive. However, it is difficult for ai robots to absorb these factors and give explanations that conform to public sense and legal science. What it usually uses is "the same cases and the same judgments". In fact, there are some specific differences in almost every case. There are a large number of cases of "different judgments of the same cases" in judicial decisions, but the reasons for these phenomena are not all wrong judgments.

Because of this, the referees with shuttling between facts and norms, have several technical and valuable options, such as interpreting legal text and legal theory, judging the admissibility of evidence and evaluating the strength of evidence, considering factors other than the law, although these factors are not exist in all cases, however, it is these factors that making decision in the modern society is complex. But the artificial intelligence judge must take the algorithm as the

introduction point, this doomed the complete intellectualization of judicial judgment if it is not impossible to realize, has also a long way to go.

#### **4. The possible reform of judicial trial mode**

At present, even if the artificial intelligence system is only an assistant or tool for human judges, it also brings and will continue to bring unprecedented huge impact on the existing trial mode. This kind of influence will be reflected in the following aspects.

##### **4.1 Reinventing the role of participants in litigation**

Some scholars believe that the introduction of artificial intelligence system will weaken the role of the trial in a certain extent, and expand the concept of “court” of the trial, “which may affect the physical court”, and then affect the inner conviction of the judges [9]. The author thinks that although the AI system could complete some or all fact-finding and identification of evidence outside the trial, it is not qualitatively different from the prosecution as a natural person. Before opening of trial, defenders will usually read and understand the evidences of prosecution, and the prosecution also tend to review comprehensively the facts and evidence of cases, the prosecuting and defending parties could form a certain degree of inner belief in the trial form for the case facts and evidence before, and affect its performance in the trial, but this does not mean that the role of the court will be weakened, so, why we say the introduction of artificial intelligence system will weaken the function of trial, enlarge the scope of “physical court”? Obviously, this kind of understanding is one-sided.

The author thinks that what the artificial intelligence system realizes is the reconstruction of the role of judge assistant, clerk, appraiser and expert- assistant in the trial. Artificial intelligence system could realize the selection and identification of evidence, and even could achieve the replacement of the appraiser, so as to become the evidentiary expert in court to participate in litigation; it can also play the role of an expert-assistent and provides reference comments for some highly professional and technical issues in the trial. And it could also serve as a judge’s assistant or clerk, plays an auxiliary role in the judgment of cases. However, what we need to discuss is, if the case involves strong professional knowledge, what kind of responsibility should the artificial intelligence expert-assistent assume, and how to assume responsibility? In this case, expert assistants play an important role and even have crucial rule in the final judgment of the case. So, in this case of judgment, once there is a problem, how to assign the responsibility to the expert appraiser? In addition, just like the computer we use in daily life occasionally appears system instability, garbled codes and other errors, the artificial intelligence systems playing the role of clerks, judicial assistants and appraisers will occasionally fail. Should the artificial intelligence system in this situation have the responsibility and how to have the responsibility? When the clerk that serves as natural person, assistant judge, appraiser and expert-assistent make mistakes, they should assume certain legal responsibility, however, when artificial intelligence system makes a mistake, who will assume responsibility, should be the user of artificial intelligence system or researcher? All these require us to take these phenomena seriously and reconstruct the current judicial mode of adjudicated system.

##### **4.2 Reconstruction of the judicial teams**

Even with the help of existing artificial intelligence systems, the workload of the judicial system is greatly reduced.” At present, the amount of transactional work that AI systems could participate in may not be less than 50 percent of the total court workload”, one scholar said. Now, the same case different sentence monitoring system, intelligent auxiliary system in criminal cases has been put into use. They put forward new requirements for the quality of judges, especially assistant judges and clerks. With the wide application of artificial intelligence system, the repetitive affairs in judicial judgments will be greatly reduced, and the judgment of cases will be more accurate [10], the efficiency of trial, analysis and adjudication will be greatly improved. At the same time, much of the work done by clerks and judicial assistants previously will be replaced by artificial

intelligence systems. This kind of personnel will also be greatly reduced, and a large number of interdisciplinary talents who are both proficient in law and familiar with the operation of artificial intelligence system will be absorbed. They will replace judges, judicial assistants and court clerks who previously had only legal expertise. Clearly, that day will come.

#### 4.3 Reconstruction of the supervision and assessment system of judges

The supervision and assessment systems of judges will also be affected. The artificial intelligence system can provide a lot of assistance for the judicial judgment work, such as evidence identification, fact investigation and judgment reasoning, which is bound to cause the segmentation and re-integration of the module of the judicial judgment process. And the adoption of marking technology in the whole process of will make all parts of the judicial work will have a clear and complete trace. These provide convenience for the implementation of the judge assessment and supervision systems, and will have certainly a profound impact on the design and implementation of these systems.

### 5. Conclusion and discussion

Today, artificial intelligence system has been widely used. Cognition is still the most insurmountable obstacle of artificial intelligence system, although this feature has been greatly improved. In the field of justice, human language is complex, and the investigation of facts and the adoption of evidence require judges to use their experience in daily life, and many personal factors are often introduced into it. Therefore, the constructive understanding of human judges plays an important role in the process of trial. In addition, the professionalism of legal language and the political color of judicial judgment have also deeply hindered artificial intelligence system judge independently in trial. A fully autonomous judicial trial is beyond the reach of artificial intelligence systems. Artificial intelligence system reconstructs the roles of appraisers, expert assistants and other trial participants, and also changes the knowledge structure and number of members of trial teams. In addition, it will have a great impact on the supervision and assessment system of judges. As is shown in the Figure 2, all these have profoundly changed the mode of judicial trial.



Figure 2 Parameter assignment which changed the mode of judicial trial

However, an interesting question is, if one day, humans could overcome the above obstacles and develop artificial intelligence systems that can completely independently judge judicial cases, like science fiction movies, will they be willing to accept such future judges? Since ancient times, power has been one of the greatest temptations of human beings, and the judicial power is no exception. Trial is not only a technical job, but also a cause full of discretion. The glamour of jurisdiction is also a reason for that many people long for it. As Max Weber said, the codification of law reduces the dignity of judges, and its formalization and rationality will also restrain judges [11], and, the introduction of completely independent artificial intelligence system and the acquisition of its behavioral ability and right ability will not only bring convenience to human beings [12], but also divide and compress the discretionary power of human judges, and even lead to the unemployment of many human judges. However, the understanding of this problem is not qualitatively different from the understanding of “machine cannibalism”. Many people may not be happy to accept such an answer [13], many scholars also realize that the using of artificial intelligence to simulate judicial trial may not be realistic [14], even argues that artificial intelligence in the judicial system could not

be the master of judicial trial [15]. Technology liberates human beings and urges them to seek the essence of life and pursue happiness continuously, instead of continuing conservatively to live in a busy, tired, struggling or competing world which is also full of repetitive work and complicated affairs. Because of this, I think, although this day may not come; however, once it comes, please do not hesitate, open your arms and embrace it!

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