Challenges and Opportunities of Emerging Technologies for the Legal Profession

Authors: Wang Yibin

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Abstract

With continuous technological advancement, artificial intelligence is increasingly permeating various professional domains, particularly gaining widespread application within the legal profession. This development stems from the unique advantages of artificial intelligence in legal document drafting, retrieval of statutes, regulations, and case law, contract review, and other areas, coupled with the demands of legal practice for multidisciplinary knowledge, the efficiency and cost-effectiveness requirements of specific cases, and the high costs of legal human resources. However, artificial intelligence itself suffers from persistent problems such as triggering human rights concerns, ethical issues, lack of legal oversight, and algorithmic discrimination. Moreover, specific to the legal profession, there exist challenges including inability to resolve technical difficulties, inability to address interpretive challenges regarding norms, inability to conduct value judgments, and deficiency in creative thinking. Consequently, when utilizing artificial intelligence, one must adopt a dialectical perspective, engage in critical examination and questioning, uphold a "human-centered" principle, and recognize that artificial intelligence serves merely as an auxiliary tool. In the inevitable future, artificial intelligence will undoubtedly be increasingly employed in legal practice, thereby imposing new requirements on legal education in the new era: integrating artificial intelligence-related knowledge into university legal curricula, cultivating interdisciplinary talents in "AI + Law," emphasizing education in legal professional ethics, and ultimately achieving harmonious coexistence between law and technology.

Full Text

Abstract

Technological advancements have brought artificial intelligence into an increasing number of professional fields, particularly the legal profession, where it has

found extensive application. This development stems from AI's unique advantages in legal document drafting, legal and case retrieval, and contract review, as well as from the demands of legal practice for multidisciplinary knowledge, efficiency and cost-effectiveness in handling specific cases, and the high cost of legal labor. However, AI itself suffers from persistent problems such as human rights concerns, ethical issues, lack of legal regulation, and algorithmic discrimination. In the context of the legal profession, AI also faces limitations in solving technical difficulties, understanding normative frameworks, making value judgments, and demonstrating creative thinking. Therefore, when utilizing AI, we must adopt a dialectical perspective, maintaining critical scrutiny and insisting on a "human-centered" approach where AI serves only as an auxiliary tool. In the inevitable future where AI will be increasingly applied to legal practice, new demands are placed on legal education in the new era. Legal education at the university level must incorporate AI-related knowledge to cultivate interdisciplinary talent in "AI + Law," emphasize education in legal professional ethics, and ultimately achieve harmonious coexistence between law and technology.

Keywords: artificial intelligence; legal profession; legal vocational education; legal professional ethics

1. AI Development and Strong State Support

Artificial intelligence, hailed as one of the three cutting-edge technologies of the 21st century alongside genetic engineering and nanoscience, constitutes an important component of Digital China construction. It not only creates new products but also enables transformative upgrades and reshaping of traditional industries, injecting them with new vitality. As a decisive technology in the new round of scientific and industrial revolution, the concept of "artificial intelligence" was formally introduced by John McCarthy and others at the Dartmouth Conference, though scholars hold different understandings of it. The first perspective views AI broadly as machines acting in the same way as humans, or as human-like intelligence in machines that complements and mutually enhances human intelligence. The second perspective considers AI as the science and engineering of making machines think like humans, addressing problems of knowledge acquisition, representation, and utilization.

On November 30, 2022, the American AI company OpenAI released the large language model ChatGPT. This model can not only engage in contextual conversations with users but also complete various tasks including text writing, planning, and even programming. Upon its release, ChatGPT attracted global users, reaching over 100 million users in less than two months. As the technology matures, generative AI products have emerged in endless variety, such as Google's BERT and PaLM, Meta's OPT-175B and LLaMA, and domestic products like Baidu's Wenxin Yiyan.

President Xi Jinping has emphasized that China's economy has shifted from a high-speed growth phase to a high-quality development stage, currently in a crit-

ical period of transforming development modes, optimizing economic structures, and converting growth drivers. There is an urgent need for major innovations like new-generation AI to provide new momentum. We must deeply grasp the characteristics of new-generation AI development, strengthen the integration of AI with industrial development, and provide new drivers for high-quality development. Focusing on building a modern economic system and taking supply-side structural reform as the main thread, we must seize opportunities from the integrated development of digitalization, networking, and intelligence, allowing AI to play its role in quality transformation, efficiency transformation, and power transformation to improve total factor productivity. We must cultivate AI enterprises and industries with significant leading and driving effects, and build an intelligent economic form driven by data, featuring human-machine collaboration, cross-boundary integration, and co-creation and sharing. We must leverage AI's technological advantages in industrial upgrading, product development, and service innovation to promote deep integration of AI with primary, secondary, and tertiary industries, using AI technology to drive transformation across industries and cultivate new growth points in fields such as mid-to-high-end consumption, innovation leadership, green and low-carbon development, sharing economy, modern supply chains, and human capital services. We must promote the construction of intelligent information infrastructure, upgrade traditional infrastructure to enhance its intelligence level, and form an infrastructure system adapted to the needs of an intelligent economy and intelligent society.

Currently, China has established a relatively comprehensive regulatory and policy system to support the vigorous development of AI (see Appendix 1). The country strongly supports the rapid development of related industries while exercising prudent regulation. Overall, however, China's AI sector started relatively late with a short development history, weak technological foundations, and insufficient talent reserves. Legislation shows a gradual decrease from central to local levels and from eastern to western regions. Central government policy documents clarify development goals and requirements for the AI field, providing guidance to provinces and municipalities. Regions with high proportions of policy formulation are concentrated in the Beijing-Tianjin-Hebei region, the Yangtze River Delta, the Pearl River Delta, and the Guangdong-Hong Kong-Macao Greater Bay Area. These regions have enormous demand for technological innovation and industrial upgrading, possess substantial capital, have the soil to cultivate AI technology, and demonstrate high levels of leadership attention, resulting in more policy formulation than other provinces and municipalities (see Appendix 2).

Overall, China's approach to AI development is primarily supportive, with remarkable achievements in recent years. From 2017 to 2021, China's AI market size continued to expand, growing from 70.9 billion yuan in 2017 to 205.8 billion yuan in 2021, with an average annual compound growth rate of 30.5%, and is expected to maintain significant growth potential. According to the 2022 AI Index Report, total private investment in China's AI field from 2013 to 2021 amounted to $61.9 billion, with new private investment of $17.21 billion in 2021

alone, ranking second globally. With the continuous expansion of market size, AI has been widely applied in fields such as industrial design, drug discovery, materials science, synthetic data, and legal services.

2. How the Legal Profession Utilizes AI

In the legal profession, AI possesses unparalleled advantages. The DoNotPay robot can automatically generate a defense document with just a few simple questions, overturning parking ticket penalties. Users only need to fill out a questionnaire, and once the robot determines their case is legitimate, it automatically assists with appeals. DoNotPay marked the beginning of legal "self-service," after which the intelligent lawyer ROSS was developed to help attorneys handle cases. The UK once held a competition between an AI lawyer and 100 experienced lawyers, assigning them hundreds of real case scenarios. The AI achieved a prediction accuracy of 86%, more than 20 percentage points higher than human lawyers. Under this trend, most primary, simple, and repetitive legal work—such as legal retrieval, legal document drafting, and legal consultation—has become highly replaceable. Consequently, entry-level legal assistant positions involving mechanical intellectual labor with professional knowledge may be eliminated, and non-professionals without specialized training can also handle some legal work. Legal professionals are no longer the center of primary legal services. In 2015, Altman Weil conducted a flash survey on whether AI could replace lawyers, polling partners at 20 American law firms. The results showed growing recognition of AI, with most believing it could replace human lawyers. Specifically, 47% of respondents believed paralegals would lose their jobs within 5-10 years, while only 20% believed AI could not replace humans, and 38% believed AI could not replace human lawyers within 5-10 years.

In 2017, the State Council formulated the "New Generation Artificial Intelligence Development Plan," elevating AI development to the national strategic level. The Supreme People's Court and the Supreme People's Procuratorate proposed building "smart courts" and "smart procuratorial work" to promote judicial reform. The large-scale application of AI in the judiciary is driven by several factors:

(1) Continuous Improvement of AI Technology

Technological progress has brought higher efficiency and broader application to the legal profession. The legal profession is rigorous, particularly evident in judicial documents. After years of accumulation, a country can provide AI with a large number of logically rigorous and accurately expressed legal documents and related cases. As AI algorithms continue to advance, they can now identify legal concepts, connect contexts, and analyze large numbers of similar texts to form intelligent retrieval systems. Legal professionals can easily collect materials through retrieval, reducing costs and improving efficiency. Their clients can also obtain legal services at lower costs. Lawyers and judges can receive corresponding indictments, defense arguments, and even judgments and rulings

based on facts and evidence. In most aspects, the accuracy and reliability of AI far exceed human capabilities. Although this may lead to job losses for many entry-level legal professionals, in the long run, improved efficiency and accuracy undoubtedly benefit judicial progress and overall human social advancement. The pain brought by technology is only temporary and affects only a minority, while technological progress serves the interests of the majority.

(2) Need for Complexity in Judicial Activities

As society becomes increasingly specialized and industries subdivided, corresponding legal services and cases have become diverse and multifaceted. The legal profession not only involves legal provisions and principles themselves but has also become inseparable from other industries, such as intellectual property and environmental protection law, which involve knowledge from natural and social sciences. Legal talent can be interdisciplinary, but cannot possibly be "universal geniuses" who understand everything. In such cases, judges' professional knowledge shows obvious limitations. AI can provide legal professionals with knowledge in areas they know little about when facing complex problems, helping them understand and make judgments. Additionally, legal determination standards and reasoning principles differ. Common law countries emphasize the role of precedent, while civil law countries emphasize statutory rules. Therefore, common law reasoning centers on cases, while civil law reasoning centers on rules. Legal professionals also need the ability to handle complex problems. As a massive legal database, AI will help people handle complex cases and legal provisions, query relevant cases and expert opinions, eliminate different judicial views on similar cases, and strive to achieve "same case, same judgment." However, we also suspect that as AI functions become more powerful, the role of judges may gradually diminish or even become unnecessary. If judgments are entirely AI-dependent, such legal AI could be open to everyone, and both parties would know the outcome before the case is adjudicated, making litigation procedures optional or even wasteful. Based on known outcomes, both parties could completely resolve issues through negotiation, further reducing costs. However, if all judicial procedures are handed over to AI, and AI provides all information to both parties without discrimination, will this cause information and privacy leaks? How should AI distinguish between information and privacy? These questions about whether such information and privacy will affect case outcomes, and whether parties can accept AI-generated results without providing this information and privacy, remain problematic. Moreover, should the process of generating final results be explained to the disputing parties? While we certainly hope AI can reduce costs and increase efficiency, we do not want algorithmic dictatorship to emerge. As for how far this can develop, we can wait and see.

(3) Helping Improve Judicial Efficiency and Fairness

In recent years, with increasing social conflicts and the reform of the quota system for judges, case-handling pressure has surged dramatically. In 2016, Shunde District of Foshan City accepted over 40,000 cases, with an average of more than 300 cases per judge—more than four times the national average and over three times the Guangdong provincial average. In common law countries, the importance of professional litigation lawyers is self-evident, yet lawyers must devote substantial energy to searching historical legal documents, summarizing and analyzing them, and finding optimal solutions. Some cases involve millions of documents, requiring clients to pay high legal fees. AI possesses superhuman information processing capabilities far exceeding human capacity. In contract review, after three years of machine learning and deep learning on commercial contracts, researchers published milestone results in early 2018 from testing the LawGeex AI platform. The study pitted LawGeex AI against 20 top-tier lawyers professionally trained in the US with over a decade of experience in reviewing standard commercial contracts. Both sides reviewed five non-disclosure agreements (NDAs)—one of the most commonly used legal agreements in business. The results showed AI's complete victory over lawyers. Evaluation metrics focused on time consumption and accuracy: LawGeex AI completed all reviews in just 26 seconds with an average accuracy of 94%, while lawyers took an average of 92 minutes with an average accuracy of 85%. The gap between AI and lawyers in this area is obvious. AI software can more quickly identify key contract issues, conduct comparisons, and reduce contract disputes. In legal retrieval, software like Lexis and Westlaw require legal professionals to read and analyze output results. AI participation can help improve retrieval efficiency. Following instructions from lawyers or judges, AI can conduct analysis not only using keyword retrieval but also semantic and case-based retrieval, demonstrating which courts or judges have made similar rulings, guiding judges in analysis and judgment. In drafting legal documents, AI can understand legal concepts, identify errors and loopholes in legal documents, compare them with similar documents, calculate amounts based on data, and automatically generate legal texts meeting specific needs. It can continuously improve based on actual effectiveness, and using fixed legal text templates helps reduce legal service costs. Chinese courts have already utilized AI to automatically generate complaints.

Of course, AI's advantages extend far beyond this, and as legal issues become more complex, AI technology advances, and legal market demands grow, a continuous stream of legal AI will be developed and more widely applied.

3. Problems with AI

(1) Ethical Issues Raised by AI

Emerging technologies, especially AI, are experiencing a new wave of innovative development and widespread application in production and life, improving production efficiency and making human life more comfortable and conve-

nient. However, as humans enjoy the benefits brought by AI, concerns have also emerged, particularly whether increasingly sophisticated AI will develop its own thinking in the near future, gradually break away from human control, pose a threat to human survival, and even become humanity's "master." Although such threats are unlikely in the short term, looking to the longer-term future, ethical risks will inevitably emerge as technology advances. Forward-looking experts and scholars continuously pay attention to and explore these issues, taking preventive measures to avoid these ethical risks as early as possible.

1. Human Rights Issues Human rights embody the spirit of freedom and democracy, respecting human life, individuality, and equality, safeguarding human dignity, and promoting comprehensive human development. Whether AI should have human rights and consciousness has already been put into practice in many countries and regions. In 2016, the German Parliament proposed a bill granting robots "labor rights," involving social insurance, wages, and vacation benefits almost equivalent to those of natural persons, causing quite a stir. In 2017, Saudi Arabia granted citizenship to a robot named Sophia. This first robot in human history to have citizenship was developed by Hanson Robotics in Hong Kong. Sophia can highly accurately imitate human expressions and emotions, possesses the ability to exchange information with people, uses Google's deep learning network for facial recognition and voice processing, and interacts with people using expressions and voice.

The question of whether AI should be granted "human rights" requires comprehensive discussion. In Steven Spielberg's 2001 sci-fi film *A.I. Artificial Intelligence*, robots were endowed with the ability to love—should they still be considered "robots" under traditional definitions? Should they be anthropomorphized or fully "personified"? Some scholars firmly oppose granting human rights to lifeless machines or their products, arguing that such actions would cause tremendous shocks to human survival and development. Other scholars believe human rights can be granted to such products, arguing that machines' designers, manufacturers, operators, users, and beneficiaries are all humans who have the ability to completely control them and make them serve humanity entirely, and can formulate corresponding laws and regulations to produce continuously learning and progressing AI, thus granting them some human rights. One of America's famous philosophers, Hilary Putnam, who taught at MIT in 1964, proposed that both humans and robots can follow the same psychological laws; whether we should view robots as artificial life or merely machines is not determined by scientific discoveries but by decisions people make; when robot technology becomes mature and perfect, robots will also proactively demand rights. In the future development of AI, highly self-aware AI will certainly emerge. Considering its own development and benefit to humanity, they can be granted a certain degree of human rights based on their characteristics, but this must be strictly limited, analyzed dialectically, and judged prudently.

2. Subject of Responsibility Due to the immaturity, instability, and complexity of new technologies, the trial operation or initial deployment phase of a new technology will inevitably produce negative impacts, especially in the AI field, which frequently causes tortious acts. Who should bear these responsibilities? Taking the most common autonomous driving field as an example, if casualties or property losses occur during driving, who is the responsible party for the accident? Is it the autonomous driving developer, the car manufacturer, the car owner, or the driver? And what role should AI play in this? So far, neither laws nor cases have provided clear answers. The common solution is to assign responsibility to owners or developers, but in future development, if AI develops self-awareness and is not completely under human control, how will this type of responsibility be allocated? AI has already penetrated all aspects of production and life, and humans rely on AI to make decisions. Once decisions are wrong, humans are highly likely to shift responsibility to AI, claiming that this was not their original intention but resulted from AI's inducement. This situation currently occurs during AI's immature period. As technology develops, AI will have stronger learning capabilities and self-awareness. How should we respond when responsibility issues arise? Responsibility ethics emphasizes responsibility for the present and future. From the current actual situation, AI technology can only provide guarantees for contemporary people to obtain tremendous convenience from technological progress, but cannot guarantee that technological development will not have negative impacts on our descendants' progress. Attribution of responsibility is an important proposition, with legislation being the most effective method, but legislation is a long process requiring substantial research, analysis, and continuous demonstration.

(2) Causes of AI Ethical Problems

1. Lack of Value Consideration in Technological Progress Just as when humanity transitioned from agricultural society to industrial society and from manual production to factory production, people only noticed the benefits of productivity progress to humanity while lacking consideration for negative impacts. Humans are the subjects of value existence—collectives, groups, and individuals all emerge based on this subject form. Regardless of the subject form, all value realization depends on whether these things are meaningful for human development. AI was originally designed to serve human production and life. However, at this stage, humanity still lacks clear positioning and future development planning for AI, and due to different cognitions among countries and ethnic groups, there are divergences in value considerations of AI. When using AI, people often focus only on solving immediate problems while lacking long-term consideration, ignoring negative aspects. Although large-scale serious consequences have not yet occurred, they are not impossible. As mentioned earlier regarding autonomous driving, including drones harming civilians and destroying civilian facilities in some wars, if emerging technologies only pursue immediate benefits without long-term planning, being counteracted by technology will only be a matter of time.

2. Unclear Subject of Responsibility One reason AI raises a series of ethical issues is that the subject of responsibility cannot be identified—without a responsible subject, there is no sense of responsibility. AI developers have the greatest impact on AI. As scientific researchers, they must possess a sense of justice, responsibility, and correct values. Many scientific researchers have a tendency toward grandiosity, focusing only on scientific achievements without risk assessment. If scientists cannot meet the public's reasonable expectations for AI, should they be responsible for their design and development? The same applies to AI product manufacturers. Researchers are generally only responsible for design, while specific product manufacturing is mostly handed over to professional manufacturers. A product goes through multiple procedures before being put into production and marketed. If manufacturers do not conduct strict quality and risk control, what responsibility should they bear for adverse consequences? After a product is designed and manufactured, it must ultimately be applied. If users lack a sense of responsibility and morality, abuse products, and cause negative consequences that further trigger ethical issues—such as using AI for online fraud, online gambling, and other criminal activities, or militarizing civilian drones—most current AI lacks self-awareness and remains in a tool state, merely being exploited by ill-intentioned people causing negative consequences, but responsibility is then shifted to the technology itself. Most ethical issues caused by AI result from improper user operations, so what responsibility should users bear?

3. Lack of Legal Guidance and Supervision The absence of legal regulations is also an important reason for current AI-related ethical issues, as the lack of legal guidance means producers lack specific standards, especially regarding risk assessment. Consequently, producers can engage in research, development, and manufacturing entirely from a profit-seeking perspective without regard to negative consequences. The same applies to users who treat advanced technology as a purely profit-seeking tool, with illegal activities emerging endlessly. AI-related behaviors should be constrained by law, and someone must be held responsible for negative consequences that have already occurred.

Incorrect use of technology will cause negative impacts on human society. The more advanced the technology and the higher the usage efficiency, the more severe the negative consequences, ultimately affecting technology's own development. The role of law is to promptly correct and restrict improper use of technology, enabling technology to correctly serve humanity. For legal professionals, especially legislators, the most important task is to formulate scientific and reasonable laws and regulations. Currently, countries worldwide are developing laws and regulations to standardize AI development. The author believes we can start from two aspects: First, analyzing whether AI possesses subject status, which involves AI's capacity to act and bear responsibility. Current AI still lacks self-awareness and certainly cannot be granted legal "personality," but as AI technology develops and AI self-awareness awakens, should we grant AI certain subject status and corresponding rights? Second, whether we should

establish manufacturing and usage standards for AI products. Although legislation always lags behind, and AI involves numerous complex fields, relevant legislation cannot be accomplished overnight. It requires national-level and even international cooperation, with substantial participation from experts engaged in AI law research, centralized discussion of AI's problems and solutions, and ultimately forming a mature and reasonable legal system to guide AI's healthy development for the benefit of all humanity.

(3) Algorithms Affecting Legal Fairness and Justice

Whether in civil law or common law systems, the reference significance of cases or precedents for court trials and judgments is self-evident. In actual trial activities, judicial personnel can achieve "same case, same judgment" by summarizing and analyzing previous cases, maintaining legal stability. However, searching through vast numbers of historical cases is not easy, requiring substantial time and effort. The emergence of AI may liberate people from this complicated work, using algorithms to assist in trials and reach judgment results, improving legal judgment efficiency.

Yuval Noah Harari predicted future law in his book *Homo Deus: A Brief History of Tomorrow*, arguing that in the future, AI will achieve dominance and our laws will become a kind of digital rule that regulates all human behavior except for physical laws. Compared with human subjectivity, AI is more objective and can maximize fairness in case judgments to the greatest extent. Harari also predicted that although most human activities, including law, will be replaced by AI, there will still be a small portion of "gods" evolved from Homo sapiens who create algorithms, compile core programs for AI, and drive the operation of the entire society through AI. This small group of "gods" could completely write AI programs according to their own ideas, thereby creating laws for social operation and making society operate according to their will, becoming "masters." This situation is no different from dictatorship, with algorithms merely serving as intermediaries. The foundation of law is fairness and justice, but individual people have their value orientations. If rules are formulated by a small number of people, they will inevitably be unfair.

AI is currently still immature. In 2015, a Black programmer in New York, Jacky Alciné, discovered that Google AI had labeled photos of him and his friends with "gorilla." Microsoft's AI TAY was domesticated into anti-Semitic, sexist, and racist behavior within a single day. Human society's morality, order, and civilized literacy have evolved and accumulated over thousands of years, with each country, region, and ethnic group having its unique beliefs, thoughts, and living habits. AI cannot be comprehensive, and if exploited by ill-intentioned people, discrimination and other problems can easily emerge. As an auxiliary legal system, algorithms must not only skillfully understand legal provisions but, more importantly, understand people. Legal judgments are not merely mechanical adaptation of legal elements but require profound insight into case subjects, objects, and even environments. Meanwhile, because algorithmic sys-

tems are based on big data, trial decisions are actually computational results derived from data. One imaginable situation is that we can only see the input data and the resulting output, while knowing nothing about the intermediate computational process, leading to the emergence of algorithmic black boxes or algorithmic dictatorship.

(4) Large-Scale Replacement of Legal Profession

In the late 19th century, large numbers of British coachmen gathered in the streets to protest the emergence of automobiles that displaced their job opportunities and left them without income. Every technological advancement improves production efficiency, liberating people from dull and repetitive work and enabling them to engage in more personalized and creative work. However, improved production efficiency inevitably causes unemployment for some people, and the legal profession is no exception. The emergence of AI has already prompted legal professionals to contemplate "what will become of lawyers tomorrow." Law has long been regarded as a field exclusive to human elites, and whether AI will replace the legal profession involves humanity's ultimate fate. Legal AI possesses advantages that humans cannot match: on one hand, its capabilities far exceed human abilities, enabling it to process massive amounts of information promptly and work anytime, anywhere without fatigue, possibly retrieving more information in one day than an ordinary lawyer could in a lifetime. On the other hand, because legal AI masters vast amounts of information, the probability of missing important information is extremely low, enabling comprehensive consideration, avoiding interference from human irrational factors, and achieving greater objectivity and fairness.

4. Human Irreplaceability

For AI to completely replace humans, it must comprehensively surpass humans in value judgment, creative thinking, and cognitive understanding. In the legal profession, this is mainly manifested in the following aspects:

(1) Inability to Solve Technical Difficulties

Although it is difficult to define intelligence without reference to the concept of AI, AI can only simulate humans in very few aspects. In fact, AI's computational patterns are vastly different from human thinking patterns. According to the Turing test, many programs can successfully deceive humans into believing they are intelligent, but in reality, these programs are quite foolish. They lack flexibility, creativity, and adaptability; have weak reasoning ability and poor logic; and cannot handle complex problems, especially creative and infinite problems. While AI has achieved brilliant victories against humans in board games, knowledge competitions, and even debate competitions, these successes must be built upon suitable application scenarios that simultaneously satisfy five conditions: abundant data, deterministic information, complete information, static events,

and single tasks in limited domains. If any condition is not met, AI will struggle to complete tasks. Obviously, AI cannot handle tasks with insufficient information or dynamic changes, especially having extremely insufficient reasoning and judgment abilities. It can only act according to input rules, lacks creativity, and cannot challenge or change rules. Expecting AI to drive significant progress in human society is clearly unrealistic. Furthermore, AI's "intelligence" lies in computation—it can only think about limited, procedural matters, not infinite, uncertain matters, and cannot handle infinite, uncertain, and paradoxical problems, i.e., it cannot solve Gödel's incompleteness theorems and the halting problem. Legal practice is often dynamic and changing, frequently encountering contradictions and value balancing issues. Qualified and mature legal workers should possess the ability to make judgments and choices within relatively short timeframes while maintaining considerable accuracy. Restoring case truth, clarifying case facts, organizing case evidence, analyzing relevant clues, familiarizing themselves with relevant legal provisions, and forming free evaluation of evidence within short timeframes are judges' daily work. Therefore, the currently popular "smart court" is destined to become only a litigation method assisting judges in completing simple, repetitive work, unable to truly replace judges. Even if AI possesses computational advantages beyond human reach, this does not mean it has the ability to make appropriate legal judgments. Speed does not guarantee truth; on the contrary, faster speed may only mean obtaining wrong answers more quickly.

(2) Inability to Solve Normative Understanding Difficulties

AI is often criticized as having syntax without semantics, data without consciousness, computation without thinking, and reasoning without humanity. This reflects the debate between Turing and Searle. AI is not intelligence in the human sense; it only acts according to rules without understanding ability, future planning and design, and cannot understand linguistic phenomena such as polysemy, ambiguity, metaphor, and personification, nor can it make inferential judgments based on understanding and interpretation. However, law requires interpretation, and in most cases, accurate answers cannot be obtained by consulting dictionaries. Legal professionals need to distinguish between legal provisions and legal spirit. Only by integrating cognition, emotion, and reflection based on summarizing experience, careful action, and observation can they make judgments according to legal principles and common sense in situations with complicated facts, complex interpersonal relationships, and human and emotional factors, and handle them appropriately. If AI cannot understand, it cannot be competent for legal work requiring normative interpretation. Even if one day AI develops to a very advanced stage with the ability to imitate human thinking and make judgments similar to human rulings, this process still does not conform to the legal argumentation process. Legal practice requires not only making judgments but also demonstrating their legitimacy. If we only look at results while ignoring the process, what happens to procedural justice? Perhaps judicial procedures would become unnecessary, eliminating the need for presen-

tation, debate, and cross-examination—just input facts and draw conclusions.

(3) Inability to Conduct Value Judgments

Legal practice inevitably involves value judgments, but this process cannot be written into programs or algorithms. Some scholars believe that not only values and meanings but also all organisms, including humans, are combinations of various organic algorithms, and that human experience is merely instantaneous biological reactions that do not accumulate into a permanent essence. Regardless, value judgment is an unavoidable part of legal practice. If AI accepts different values, it will inevitably make different judgments on the same issue according to different values, ultimately leading to contradictory results. As the final peaceful resolution of human disputes, law's most important significance lies in using reasons acceptable to two or more parties to resolve disputes and end conflicts.

(4) Lack of Creative Thinking

The three-factor hypothesis of creative thinking holds that creative thinking is determined by knowledge, curiosity and imagination, and value orientation. Creative thinking first originates from knowledge, and because creativity often emerges from interdisciplinary cross-fertilization, it should possess cross-disciplinary and cross-domain knowledge—this poses no problem for AI, whose massive storage space for knowledge far exceeds human capacity. Second, creative thinking comes from curiosity and imagination. As Einstein said, "I have no special talents, I am only passionately curious." Imagination is more important than knowledge, but AI can only operate under rules given by humans and temporarily cannot break human rules, unable to prove it also possesses imagination and curiosity. Finally, creative thinking relates to value orientation and pursued goals. Most AI is developed with purpose orientation, i.e., short-term utilitarianism, specifically manifested as seeking quick success and immediate results, hoping for "instant results." Based on this, the author judges that in the foreseeable future, it will be very difficult for AI to produce creative achievements. To achieve creativity, AI essentially needs to learn how to program and extensively modify its own algorithms. Even if this possibility exists, there is still a long way to go in the future. In the AI era, creativity in the legal field will be an extremely valuable ability. As an analytical skill, its importance will surpass that of specific disciplinary knowledge, which will change faster than ever before but can be easily processed by AI. The core of future legal skills will be competition with AI's creative abilities, so the ability to design new, previously unknown solutions for legal problems will be more important than ever.

5. Responses of the Legal Profession

(1) Innovating Legal Education and Cultivating Rule-of-Law Talent for the AI Era

1. Training Objectives The AI era requires cultivating interdisciplinary talent with solid foundational legal theory, both arts and science education, good professional ethics, and sound legal personality. Legal professionals in the intelligent era should not only master basic legal knowledge and professional skills but also possess high cultural quality, strong comprehensive abilities, and sound legal personality. They should have multidisciplinary knowledge structures in computer science, electronic information, AI, and other fields, multidisciplinary learning integration capabilities, and multi-domain understanding, with some understanding of complex intelligent systems and interdisciplinary fields. Although AI can use correlation for association and simulation based on large amounts of data according to preset logical rules and value standards, it cannot replace natural persons' judgments and cannot guarantee that case results are legal, reasonable, and emotionally appropriate. However, natural persons' will, character, beliefs, values, and emotions are irreplaceable. Therefore, the cultivation of future rule-of-law talent should still focus on thinking ability, value judgment, and character shaping. To adapt to the AI era and improve work efficiency, there should be some understanding of relevant AI software and its application principles, proficiency in use, and the ability to distinguish right from wrong.

2. Training Methods The cultivation of "AI + Law" interdisciplinary talent is urgent, and excellent universities at home and abroad have made many valuable attempts. The New Jersey Institute of Technology offers an interdisciplinary course on "Law, Technology, and Culture," focusing on cultivating students' learning of technology, media, environment, health, and culture-related laws. It enhances students' knowledge in law and law-related business and administrative institutions and other professional fields, using advanced seminars and other methods to learn interdisciplinary knowledge and exercise interdisciplinary thinking. Stanford University's "Law, Science, and Technology" LL.M. program provides students with high-level practical projects in "Law + Technology" and academic and professional training in interdisciplinary analysis, covering e-commerce, jurisdiction, and dispute resolution, involving the information industry, venture capital, high-tech startups, and intellectual property and contract law issues related to biotechnology and health sciences. Stanford has invested substantial resources in this training program, including connecting with outstanding graduates in technology law, Silicon Valley tech elites, and distinguished alumni.

Since its establishment in 2009, the Law School of Beijing Institute of Technology has pioneered the cultivation of "Law + Technology" interdisciplinary high-end legal talent. From a holistic and systematic perspective, it has formulated a complete set of curriculum combinations from basic to advanced levels,

studying law and cutting-edge technology, and gradually cultivating students' rigorous scientific thinking and solid legal analysis abilities. Legal education should serve legal practice. In reforming legal education in the AI era, law schools should first explore what impact AI can actually have on legal practice and adjust legal education models accordingly. Scholars Gong Xiangqian and Li Shouping believe in developing "Legal Technology" courses that enable students to express legal concepts in computer form, recognize legal and linguistic uncertainty, and thereby understand legal reasoning theories and methods in the era of big data and AI. We can learn from foreign experiences: on one hand, reduce courses that may be replaced by AI, such as legal document writing; on the other hand, increase subjects not easily replaced, such as legal professional ethics and legal logic. Simultaneously, law students should master certain computer technologies to use computer systems to collect data, assist decision-making, and draft documents. In AI majors, implement an "AI + Law" model, establish new AI law disciplines and related curriculum construction, offer new courses such as legal knowledge graph technology and application, AI technology introduction, AI and law, study AI legal regulation and its application in various legal professional fields, focusing on "rules" and "technology." Universities with conditions can launch "AI + Law" dual-degree training models at the undergraduate level, breaking traditional single-discipline limitations, offering interdisciplinary courses, integrating legal and AI teaching concepts to meet the demands of the AI era for legal education.

(2) Combining AI with Legal Professional Ethics

AI is "the science of having machines perform work requiring human intelligence." No matter how AI develops, it cannot completely replace human roles, let alone help people achieve educational effects in cultivating rule-of-law talent with both morality and law. However, we can use AI to change education methods, deepen reforms in legal professional ethics education, and enable AI to better serve legal education and development.

"Quality education is the premise, professional education is the foundation, and vocational education is the orientation." In the AI era, legal professional ethics education is particularly important. AI in the future can easily threaten existing order and values. The main content of legal professional ethics is the code of conduct and moral ethics that legal professionals should follow in their work and daily life. Strengthening legal professional ethics education and cultivating students' legal practice skills will enable them to better control AI in the future, hold firm to beliefs, maintain bottom lines, flexibly apply technology, and serve society.

First, AI development has already permeated all judicial links. In 2019, Shanghai Second Intermediate People's Court used an AI robot to assist in adjudicating a robbery case, marking the first time AI was applied in trial practice in China's court system. In addition, AI can effectively improve case-handling efficiency and reduce cost investment in evidence collection, case material reading,

relevant case retrieval, and case situation analysis. Legal intelligent robots can free legal professionals from vast numbers of legal provisions and related cases, conduct intelligent retrieval and analysis of similar cases, strive to achieve "same case, same judgment," and provide real-time supervision and reminders for special cases, facilitating timely corrections by case-handling personnel, which has positive effects on achieving legal fairness and justice.

Second, AI can simulate teaching scenarios, facilitating "experiential teaching" in legal professional ethics classrooms. Experiential teaching is developed based on the concept of "experience," serving as both a teaching method and model, as well as an educational philosophy. It emphasizes students' personal experience in the teaching process, with students as the main body and specific practical activities as the main carrier of class. It enables students to comprehend theoretical knowledge through practical operations and ultimately apply theory to practice. Experiential teaching in legal professional ethics includes classic reading, case discussion, scenario experience, and field observation. For example, AI can more vividly simulate court scenes, improving teaching designs for evidence presentation, cross-examination, and debate, allowing students to simulate different court roles to experience the judicial environment and atmosphere, conduct repeated training and practice, and during the simulation, present scenarios involving legal professional ethics such as "conflict of interest" and "confidentiality rules," enabling students to make choices under pressure and exercise their ability to solve problems under pressure.

Third, introducing AI into legal professional ethics education requires careful examination of issues such as algorithmic discrimination. Current AI can only analyze and judge according to existing rules, unable to consider value issues beyond rules. AI uses data and algorithms to digitize mathematical methods, legal affairs, and legal professional ethics evaluations, serving as intelligent technology to assist in case handling and achieve the purposes of legal dispute resolution and social justice. However, if the predictive function of big data is exaggerated or analogized arbitrarily, it is highly likely to generate new moral risks, affecting the cultivation of thinking abilities among the educated and planting hidden dangers for their future legal careers. Excessive promotion of and reliance on AI's "same case, same judgment" will to some extent interfere with the judiciary, making the gap between first and second trials smaller and smaller until it eventually disappears, rendering the two-instance system meaningless. The complexity and value-based nature of law itself require judicial activities, especially high-end legal services and prosecution and trial work, to rely more on human wisdom. Therefore, legal professional ethics education must focus on cultivating thinking abilities and practical skills of legal professionals.

Finally, AI can only analyze and infer under current rules but cannot consider values beyond rules. Meanwhile, due to certain gaps between public cognition and legal professionals, AI cannot explain situations that meet legal professional ethics requirements but conflict with public order and good customs in more harmonious ways. Once maliciously exploited by ill-intentioned people, new

power abuses may result. The public cannot rely solely on big data for public opinion supervision. If ordinary citizens pre-emptively assume emotions such as "wealth disparity," "judicial corruption," and "official-citizen conflict" without understanding judicial processes and nature, AI may be used to undermine the social credibility of the judicial system and even cause group social public opinion crises. Therefore, when using AI for legal professional ethics education, we must adhere to a "human-centered" principle—AI can only be a tool. We must give full play to students' subjective initiative and avoid excessive dependence on AI.

(3) Harmonious Coexistence Between Legal Professionals and Technology

1. Reference but Not Blind Obedience AI uses data and algorithms to digitize legal issues as auxiliary tools for case handling. Intelligent technology may help adjudicators resolve disputes and maintain social fairness and justice, but its touted "same case, same judgment" may damage substantive justice. As early as January 2018, the Supreme People's Court officially launched and operated the "Similar Case Intelligent Push System," which covers all causes of action and pushes similar cases from aspects such as case nature, case characteristics, dispute focus, and legal application. The overall search and push accuracy rate for all causes of action documents reaches 63.7%, and the top ten typical similar case push accuracy rates for civil and criminal cases reach 85.5%. However, cases always have individual characteristics. What we claim as "same case" only confirms basic facts rather than comparing all real-time significance of cases, and final case handling results do not always rely entirely on immediate facts—various non-basic fact factors also have considerable significance for case outcomes. There cannot be two completely identical cases in the world; each case occurs in a specific context, and differentiation is the main theme between cases. Adjudicators must distinguish case differences and compare similarities to approach individual justice and the truth of judicial activities. Excessive promotion of or reliance on AI, leaving cases to algorithms, will further narrow courts' discretion, affecting judicial independence and fairness. Moreover, if AI is used for every case, the results of multiple trials will certainly be identical, rendering the two-instance final judgment system and retrial system meaningless. The complexity and value-based nature of law itself require legal professionals to exert creative thinking. We cannot deny that AI is a good tool, but it is only a tool. Its training and output results can be used as references but must never be blindly obeyed. At least in legal practice, "humans" are the eternal protagonists.

2. Master but Not Be Controlled Future legal education must integrate AI-related disciplines, enabling law students to understand AI basic knowledge and master software used in future work proficiently. The Law School of Sichuan University has made positive attempts by introducing faculty talent in statistics and computer science, offering courses such as legal big data and legal AI

to achieve interdisciplinary interaction. Although AI lacks creative thinking, students must learn and even develop AI related to law with creative thinking. The LawX Legal Design Laboratory at Brigham Young University's law school developed an application called SoloSuit to help people who cannot afford legal services simplify legal procedures when responding to lawsuits and filing claims, enabling more people to enjoy legal services—this is absolutely beneficial. However, will AI at an advanced stage "counterattack" humans, or will humans become increasingly dependent on AI, leading to the degradation of their own abilities? Problems that could originally be solved through independent thinking may evolve into problems that can only be solved using AI. On this issue, we must adhere to the principle of "human-centeredness," insist on AI's tool attribute, and prevent a small number of people who design and research AI from using algorithms to "rule" the world. Even in legal practice, human value judgment and multi-faceted consideration are needed.

3. Use but Learn to Question Future legal issues will only become more complex, and legal provisions will become increasingly refined. Mastering and using AI will be essential professional skills for every legal professional. Legal education must also teach students to question data and algorithms, avoiding excessive dependence on technology. AI also has flaws—designers' biases may be transformed into algorithmic biases. Once users fail to notice this problem, it will bring immeasurable serious consequences. Legal professionals must learn to view AI with a questioning eye, use rational thinking to doubt AI's operation process, and use their unique critical thinking to dialectically view AI output results.

AI is the crystallization of human wisdom, representing the frontier and top level of human social technology. It will inevitably play a huge role in the future, promoting the development and progress of human society. Humans are human because…

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Note: Figure translations are in progress. See original paper for figures.