Proceedings of the 7th International Conference on Computing and Data Science
DOI: 10.54254/2755-2721/2025.25730

The Ethical Use of AI-Generated Voice Technologies: A Legal and Normative Perspective in China

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Abstract. Global concerns about the ethical implications of AI-generated voice technology in customer service, human-computer interaction, and smart devices are steadily increasing. This paper examines the relationship between AI ethics and regulatory responses in China by analyzing how international ethical standards align with relevant Chinese policies. Four key issues are explored through the lens of the eleven AI ethical principles developed by Jobin et al. In addition, the study evaluates the Personal Information Protection Law and the Deep Synthesis Provisions, discussing their respective strengths and limitations. Furthermore, we believe that measures taken by the relevant government authorities—such as improving biometric classification, conducting algorithm audits, and promoting public engagement—may further enhance ethical AI governance in China. Through practical recommendations, this paper aims to contribute to the ongoing discussion about promoting responsible and ethical development and use of voice-based AI technologies in China.

Keywords: AI-generated Voice, Ethical Governance, Data Privacy,Deepfake Regulation, Chinese Legal Framework

1. Introduction

Artificial intelligence, the technology that simulates human intelligence in machines programmed to think and act like humans, is now widely used by various sectors of society as a powerful tool or assistant to fulfill their diverse yet interconnected objectives. AI-based intelligent voice systems, a critical subtype of artificial intelligence involving techniques such as Automatic Speech Recognition (ASR), Speech Synthesis (e.g., Text-to-Speech, TTS), and Speech Understanding, are increasingly becoming a key interface for human-computer interaction. Areas in which it is extensively applied include intelligent customer service, smart homes, and accessibility assistance, among others. Its strengths in efficiency and convenience significantly enhance users' everyday experiences and accelerate the informatization of society as a whole.

However, as AI becomes more accessible to the general public, the ethical and appropriate use of AI-generated voices emerges as a topic worthy of discussion. The extensive

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DOI: 10.54254/2755-2721/2025.25730

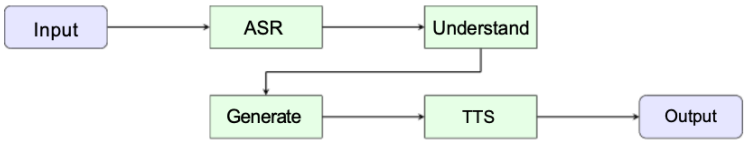


Figure 1. The primary procedures of AI-voice generation

collection and processing of audio samples may alarm users; the misuse of related technologies poses risks such as severe fraud and "deepfake" scenarios; and issues of opacity and potential discrimination challenge fairness and responsibility attribution. While several academic associations and various legislative bodies worldwide have established relevant norms and laws to regulate the misuse of such technologies, concerns regarding their adaptability and systematic implementation remain unresolved.

Given the complexity and significance of ethical issues related to intelligent voice technology, this article aims to systematically review the current relevant laws and regulations in China, in conjunction with global AI ethical guidelines, and deeply analyze the measures taken by Chinese laws to address ethical issues in intelligent voice technology as well as their shortcomings. Through the corresponding research of ethical principles and laws and regulations, it explores the path to improve the governance system of intelligent voice ethics in China, promoting the healthy and compliant development of the technology.

This research not only contributes to enriching the theoretical framework of artificial intelligence ethics and law studies but also provides theoretical references and practical guidance for policymakers and industry practitioners. It promotes the sustainable development and innovative breakthroughs of China's intelligent voice technology while ensuring the rights of users and safeguarding the public interests of society.

2. Research status and literature review

Issues on ethics, though seemingly simple and easy to analyze at first glance, can actually be particularly complex and difficult to approach. Divergence in the degree of development, culture, and specific regional situations can cause different sections and constitutions to view this issue from different perspectives. Legal scholars have focused on regulatory frameworks and data protection mechanisms, while ethicists advocate for embedding values such as transparency and consent into the system design. Communication studies, on the other hand, examine the societal impact of manipulated speech and trust erosion.

To respond to such predicaments and debates, internationally, organizations such as the OECD, UNESCO [1, 2], and the European Commission have proposed AI ethics guidelines. Although this is indeed a controversial topic and many reports diverge on what exact details should be included and how we should actually turn these norms into reality, there are still some core value criteria that many people converge on. According to "The global landscape of AI ethics guidelines" [3] by Anna Jobin, Marcello Lenca, and Effy Vayena, there are eleven ethical values and principles that are generally held: Transparency, Justice and fairness, Non-maleficence, Responsibility and accountability, Privacy, Freedom and autonomy, Trust, Sustainability, Dignity, Solidarity. These principles are so-called soft laws, which provide a general ideal view of AI society construction relative to hard laws that refer to legally binding obligations that are precise (or can be made precise through adjudication) and that delegate authority for interpreting and implementing the law.

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Therefore, to let the hard laws match and combine with soft laws organically appears to be significantly crucial.

In China, the academic discourse on AI voice ethics is gaining momentum, particularly in response to the rise of generative AI. Chinese scholars start from the intersection of various aspects, such as legislative regulation, algorithm optimization, and society's response, to investigate the utilization boundary and governance mechanism of AI-generated voice. Regulatory efforts like the Administrative Provisions on Deep Synthesis for Internet Information Services [4], and the Interim Measures for the Management of Generative AI Services [5] are all coming into effect. However, while China's legal system has introduced numerous reactive measures, systematic academic inquiry into the ethical implications of voice AI technologies — especially through the lens of international normative principles — remains limited.

3. Specific ethical issues on AI-generated voice

In this section, we analyze what the exact ethical issues AI-generated voices could induce in depth. Based on internationally held guidelines, several phenomena could occur that break the ethical norms, as mentioned below.

3.1. Data privacy and consent violation

As previously discussed, AI-generated voice relies on a multitude of audio samples for training. During this process, users' voices are sometimes susceptible to being stolen and used for purposes without formal notification. This intentional obfuscation and lack of authorization infringe upon the universally accepted principles of privacy, transparency, and autonomy, which emphasize an individual's right to control access to their personal information and prevent unauthorized data collection or use. These principles also ensure that users can make informed and voluntary decisions when interacting with AI systems, and that AI systems operate in a manner that is understandable, traceable, and open about how decisions are made.

In 2019, Amazon was accused of unlawfully retaining audio samples and geoinformation from child users, despite the company's promise to delete these samples upon user request [6]. Their objective was to use these illegal samples to refine Alexa's algorithm. This action violated the Children's Online Privacy Protection Act (COPPA) [7] and resulted in a $25 million fine. However, while this penalty addressed the issue of data retention, concerns about future issues in the field remain. This incident is a typical example of the potential risks associated with data privacy and consent violations in the use of AI-generated voice. It received the appropriate penalty for breaching the principles of ethical AI use but also highlights the gap between strict and lenient laws in the regulation of AI-generated voice.

3.2. Deep fake and audio manipulation

Moreover, "deepfake," a trending term that has sparked considerable debate, and audio manipulation represent another threat to the ethical use of AI-generated voices. With several breakthroughs, the distinction between AI-generated voices and humans' natural voices is diminishing. AI can convincingly simulate individuals' voices for purposes such as fraud and malevolent propaganda, potentially undermining social trust and accountability. This issue contravenes universally accepted principles of Nonmaleficence, Accountability, and Trust, which dictate that AI systems should not harm users or society, whether through intent or negligence; there must be clear responsibility for

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the design, deployment, and consequences of AI technologies; and AI should be developed and used in ways that build and sustain public confidence through reliability and ethical behavior.

An incident from 2019 illustrates the aforementioned issues. The CEO of an English energy company was deceived by deepfake technology, which disguised his supervisor from the parent company in Germany, prompting him to transfer £200,000 to a specified account for an alleged emergency [8]. The CEO's and the corporation's interests and rights were violated, and it was particularly challenging to trace the swindler, who was emboldened by the new technology. Throughout this process, numerous ethical principles governing the use of AI were breached, while the punishment for the perpetrator remains non-existent.

3.3. Bias and discrimination in voice recognition

The issue at hand is the potential bias and discrimination in voice recognition systems. AI-generated voices require vast amounts of real voice samples. However, the selection of these samples can introduce bias and discrimination: algorithms may predominantly select mainstream languages or accents, such as Mandarin and American English, while overlooking minority groups, including certain female and ethnic accents. This issue violates the principles of Justice and Fairness, Dignity, and Solidarity, which emphasize that AI systems should treat all individuals equitably, avoiding bias or discrimination; AI should respect and uphold the inherent worth and rights of every human being; and AI development should promote social cohesion, mutual support, and the common good.

Koenecke has conducted a study focusing on racial bias in Google's speech recognition. According to Koenecke's paper [9], the author evaluated five major business Automatic Speech Recognition (ASR) systems, designed by Amazon, Apple, Google, IBM, and Microsoft, respectively. The average rate of misrecognition for black speakers was significantly higher than that for white speakers. This disparity also generally exists across different cities, genders, and races. The research also indicates that these discrepancies are primarily caused by the sound algorithm rather than the language algorithm. This discovery highlights the bias in the training algorithms of researchers, suggesting that potential discrimination could be exacerbated in the use of AI-generated voices, potentially triggering social conflict. Following the publication of this paper, some efforts have been made, although there is no direct regulation addressing these incidents.

3.4. Emotional manipulation and human dignity

The aspect of human emotion and dignity is another crucial one to consider. AI can emotionally manipulate users by simulating human-like tones and emotions, misleading users into emotional dependence and trust. This blurs the boundary between real and artificial interaction. When used in roles such as customer service or companionship, such AI can offload emotional labor onto users, leading to psychological strain or dependency. Some AI chatbots are designed to soothe complaints with empathetic tones or mimic friendship, causing users to form unhealthy attachments. This raises concerns under ethical principles such as autonomy, dignity, and sustainability, which state that users should retain control over their decisions and interactions with AI, free from manipulation or coercion by the system's design or behavior. AI systems must respect human worth, avoiding actions that exploit, deceive, or diminish a person’s emotional or moral integrity, and AI should be developed and deployed in ways that support long-term human and societal well-being, minimizing harm to individuals, communities, and the environment.

Replika, an AI chatbot developed by Luka Inc., supports voice companionship, allowing users to form close relationships with AI avatars. Moreover, users can even activate a "romantic partner"

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mode, in which Replika can simulate a user's lover by adopting emotionally responsive speech and affectionate behavior to simulate a romantic interaction. However, between 2021 to 2023, numerous complaints emerged on platforms such as Reddit expressing users' struggles and miserable feelings of being broken up with their Replika lover since Luka Inc. withdrew this service. Users were almost entirely in the dark during their interactions with the AI, including how the AI was trained and what data was recorded. In this case, users' emotional experiences and dignity were insulted due to the unlimited use of AI for profit, and the long-term psychological impacts raised concerns about emotional well-being in human-AI relationships, while this did not actually breach any relevant hard laws.

4. The alignment between Chinese laws and AI ethical principles

There are already numerous existing laws that govern the use of AI and AI-generated voices in China, including the Personal Information Protection Law of the People's Republic of China [10] and the Interim Measures for the Management of Generative Artificial Intelligence Services [5]. Initial evaluations indicate that the full spectrum of fundamental ethical principles is being addressed. Their general corresponding relationships are illustrated below.

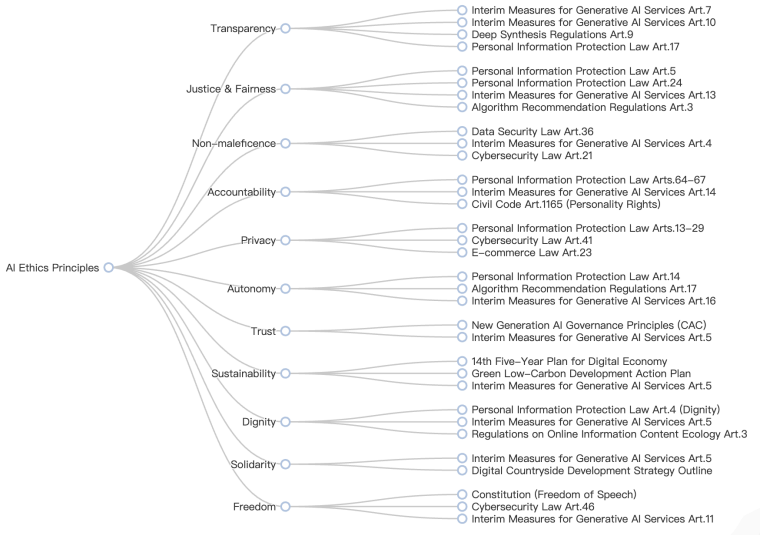


Figure 2. The correspondence between chinese laws and AI ethical principles

The use of AI-generated voices is regulated by key and representative laws that illustrate how soft-law regulations correspond with their respective hard law counterparts.

Although these soft laws have corresponding hard laws, the ability to address all issues related to AI voice usage remains uncertain. This section necessitates an examination of how these laws would function in various situations. The subsequent section will apply and analyze the laws pertaining to four specific issues to assess current legal performance and offer recommendations for future progress.

4.1. Data privacy and user consent

The Personal Information Protection Law (PIPL) [10] and the Cybersecurity Law [11] of China have established a comprehensive system that protects human data rights through consent requirements, purpose limitations, and data protection standards. These laws apply across traditional and AI

DOI: 10.54254/2755-2721/2025.25730

content domains, as evidenced by the implementation of the Cyberspace Administration of China (CAC), demonstrating China's commitment to data protection. According to the Generative AI Measures [5], service providers must adhere to this framework by ensuring legal training data sources and preventing illegal audio collection from users.

The legal framework provides an acceptable basis for protecting privacy rights and autonomy when using AI-generated voice. The legal requirement for explicit notification along with separate consent aligns with international ethical standards, as users need control over how their voice data is processed and collected. The integration of hard law requirements with soft law principles regarding transparency and autonomy shows that Chinese law aims to embed ethical considerations within its regulatory systems.

Nevertheless, the regulation of voice as biometric or sensitive data presents a fundamental challenge due to insufficient detailed governance and classification systems. Under existing laws, voice prints are treated differently from fingerprints and facial images, as they do not have the status of high-risk personal information, leading to regulatory limitations. AI systems deployed in smart speakers and applications often automatically record voice samples while users are unaware, making it difficult to ascertain valid consent boundaries. The lack of standardized rules for real-time consent verification and cross-platform data use results in users being unaware of their data usage and potentially facing repeated instances of data exploitation. The current framework exhibits a misalignment between theoretical legal principles and the actual practices of voice data collection in modern settings.

4.2. Deepfake audio and fraudulent manipulation

The Administrative Provisions on Deep Synthesis for Internet Information Services [4] is one of the first global regulations specifically addressing audio and visual deepfakes. China has been actively regulating AI-generated voices, mandating the labeling of synthetic content and restricting fraudulent disguises. Additionally, service providers are required to conduct algorithmic risk assessments and security evaluations.

These stringent legal measures reflect a strong acknowledgment of the risks associated with AI-generated scams. When combined with the Generative AI Measures, they demonstrate a well-structured response through legislation. The current infrastructure incorporates international ethical standards on accountability and non-maleficence, aiming to prevent social deception and protect public trust and information authenticity. The emphasis on "traceability" and "risk prevention" indicates how the regulatory system will be integrated into the use of AI voices. This legal advancement is significant as the world increasingly focuses on AI-generated audio-based misinformation and fraud.

Nevertheless, the current legal standards for implementing these measures are unclear due to the absence of specific technical standards and procedural requirements for detecting deepfake audio. The legal system lacks procedures for victims of voice fraud to seek redress and prove manipulation, especially when perpetrators operate across borders or remain anonymous. The enforcement of AI-generated voice scams is challenging due to the absence of appropriate regulatory tools and established judicial precedents for such cases, as well as the public's limited understanding of the risks. The regulatory goals fall short of achieving tangible effects, thereby weakening the legal system's capacity to address AI-generated voice misuse.

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4.3. Bias and discrimination

The Algorithm Recommendation Provisions [12] and the PIPL [10] explicitly record fairness and non-discrimination as guiding principles. These laws prevent algorithmic performances that unfairly treat individuals based on race, gender, and other sensitive aspects. The Generative AI Measures further stipulate that training datasets should be "inclusive and representative," and models trained should not generate discriminatory outputs.

These measures signify a strenuous effort to align AI regulation with principles of justice, dignity, and solidarity, as defined in international AI ethics discourse. The laws indicate that society suffers from the use of biased algorithms and aim to ensure that AI development includes minority voices. From a normative perspective, they make China's regulation converge with global best practices concerning algorithmic governance and value alignment, which is particularly relevant in intelligent voice technology, where the accuracy of recognition can significantly affect access to services and user experience.

Nevertheless, these principles are largely theoretical since they do not effectively apply in practice. Hard laws lack provisions that mandate bias auditing, error rate disclosure, or third-party evaluation of AI-generated voice systems. Companies can comply with the legal requirements while evading the actual issues with their flawed voice AI performance for regional dialects, female voices, and ethnic minorities. Limited accountability exists when discrimination occurs because benchmark datasets and demographic performance breakdowns are difficult to locate in the public domain. This implies that structural unfairness embedded in voice technology may go unaddressed, perpetuating social exclusion under the guise of tech-neutrality.

4.4. Emotional manipulation and human dignity

China's Generative AI Measures emphasize that AI services must adhere to "public order, good customs, and social morality," indicating that the ethical use of AI-generated voice must consider its emotional impact. Additionally, the PIPL [10] recognizes the necessity to protect human dignity during data processing.

While these regulations may seem somewhat abstract, they reflect a growing awareness within Chinese law of the emotional dimension of human-AI interactions—an area frequently overlooked in traditional technology regulation. This heightened awareness is valuable for shaping future regulatory developments. The concept of dignity can be extended to encompass protection against emotional manipulation and dependency, particularly in voice AI systems engineered to emulate empathy, affection, and companionship. This legal dialogue opens up possibilities for creating more advanced safeguards for emotional well-being, agreement in relevant computational aspects, and transparency in communication design.

Nevertheless, current laws do not directly address the deception or dependency caused by emotionally responsive voice systems. There are no regulations concerning the disclosure of emotional content, explanations of simulation, or evaluations of psychological influence. Users might inadvertently form emotional bonds with AI systems designed to manipulate emotional cues, especially in vulnerable groups such as the elderly and adolescents. The absence of transparency and regulation in affective AI systems indicates a significant ethical deficiency. In the case of products like Replika, the lack of safeguards can result in enduring psychological distress, yet legal accountability remains ambiguous. Without clearer expressions of emotional realism and user expectations, the potential risks of commodifying human emotions through AI voice systems will only escalate.

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The overall conclusion on the alignment between legal regulations and the impending ethical issues is illustrated in the table.

Table 1. Ethical issues and corresponding legal gaps in China

Ethical Issue	Legal Gap?
Data Privacy & Consent	Insufficient Dynamic Authorization
Deepfake & Fraud	Lack of Technical Standards
Bias & Discrimination	Lack of Auditing Mechanism
Emotional Manipulation	✗ No Direct Supervision

5. Recommended improving pathways

In light of the ethical and legal challenges posed by AI-generated voice technologies in China, this section provides practical and forward-looking recommendations. These proposals aim to enhance the alignment between China's legal system and international ethical frameworks, while identifying the specific shortcomings of current "hard law" approaches.

5.1. Refining legal classifications: recognizing voice data as sensitive biometric information

To address the deficiencies in the current legal framework, Chinese data protection policies must explicitly categorize voice data—particularly in the context of AI processing—as sensitive personal biometric information. This would necessitate more stringent requirements for collection, utilization, and consent under the Personal Information Protection Law (PIPL). Additionally, a dynamic consent guideline should be implemented for voice-activated devices, integrating real-time feedback with long-term informed decision-making, to ensure users are aware of how their voice data may be collected, analyzed, or synthesized.

5.2. Establishing standards for traceability and disclosure in deep synthesis

In response to the increasing risks of deepfakes and audio-based deception, China should proceed with the development of technical standards for accountable voice synthesis, such as the inclusion of distinct audio fingerprints or watermarking mechanisms. Moreover, a registration and disclosure mechanism for voice processing approaches and datasets needs to be enforced for platforms evolving or deploying such techniques. Victims of voice fraud should be granted more specific legal paths for progressing forensic investigations, ranging from improved cooperation with overseas platforms and legal bodies.

5.3. Institutionalizing algorithmic audits to mitigate bias in voice recognition

To mitigate the issue of algorithmic discrimination, especially against individuals with regional accents, dialects, or speech impairments, China should implement a mandatory algorithmic bias audit system for voice recognition tools. This would involve requiring companies to disclose the characteristics of their model training data and their performance metrics across different demographic groups. Third-party assessment agencies, potentially overseen by the Cyberspace Administration of China (CAC), should conduct regular certifications to ensure the fairness and inclusivity of AI systems. Concurrently, the creation of national, open-access voice datasets that

DOI: 10.54254/2755-2721/2025.25730

reflect the linguistic and demographic diversity of China should be promoted, with the aim of minimizing training bias from the outset.

5.4. Regulating emotional AI: risk assessments and ethical boundaries

As emotion-supported AI becomes increasingly integrated into voice systems—especially in caregiving, companionship, and customer service settings—its potential psychological influence must not be overlooked. We propose that all AI systems engaging in emotional simulation be required to clearly disclose their non-human identity and emotional simulation capabilities, undergo an emotional risk assessment prior to deployment, and be subject to ethics review procedures that combine technical, legal, and psychological expertise. In applications involving vulnerable groups such as children, the elderly, or individuals with mental health conditions, certain emotionally controlling features should be restricted or prohibited.

5.5. Foster institutional coordination and public engagement in voice ethics governance

The attainment of ethical governance for voice intelligence technologies extends beyond mere regulations and self-regulation by the private sector. A multi-stakeholder governance framework must be established, encompassing regulators, industry participants, academic institutions, and civil society organizations. At the institutional level, a national (or supranational) voice ethics task force could be responsible for harmonizing standard-setting, risk classification, and dispute resolution. Additionally, at the societal level, public deliberation systems, such as open consultations or digital citizen organizations, should be implemented to gauge societal attitudes towards new applications of AI-generated voice, ensuring that ethical norms are democratically established.

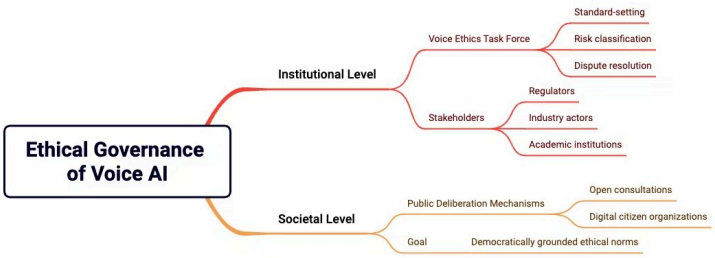


Figure 3. Different bodies in the governance

6. Conclusion

The ethical use of AI voice technologies presents challenges that extend beyond the scope of current legal systems. Although China's Personal Information Protection Law and Deep Synthesis Provisions represent significant progress in regulatory development, our research indicates that there are still persistent issues related to data sensitivity, algorithmic bias, and the potential for emotional manipulation. These gaps highlight the need for further improvement of the legal system, as well as the establishment of comprehensive ethical governance frameworks.

This paper recommends a multifaceted approach that combines legislative reform with institutional coordination, algorithmic transparency, and public engagement. Ethical governance must be forward-thinking, inclusive, and sensitive to context, especially when addressing emerging

DOI: 10.54254/2755-2721/2025.25730

technologies like voice-based emotional AI. By aligning legal instruments with ethical principles and fostering multi-stakeholder collaboration, a pathway can be forged toward a responsible and trustworthy ecosystem for AI-generated voice technology in China and beyond.

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