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Retraction

Retracted: Analysis of Legal Issues of the Crime of Endangering Public Safety Based on Data Mining Algorithm

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Xu and T. Feng, "Analysis of Legal Issues of the Crime of Endangering Public Safety Based on Data Mining Algorithm," *Security and Communication Networks*, vol. 2022, Article ID 4794752, 12 pages, 2022.

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Research Article

Analysis of Legal Issues of the Crime of Endangering Public Safety Based on Data Mining Algorithm

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In order to improve the analysis effect of legal issues of the crime of endangering public safety, this paper analyzes the legal issues of the crime of endangering public safety based on the actual mining algorithm and uses numerical methods to qualitatively study the evolution behavior across phase intervals. Moreover, this paper improves the algorithm based on the actual needs of legal mining. When solving the eigenvalues of the given Hamiltonian's duration equation, the zero-energy solution can be found in the case of open boundaries. In addition, this paper applies the improved algorithm proposed in this paper to the mining of criminal law legal issues of crimes against public safety, assigns a dynamic IP to each process, and builds a model based on this. Through the above simulation research, it can be seen that the legal problem analysis model of the crime of endangering public safety based on the data mining algorithm proposed in this paper has a good legal data mining effect.

1. Introduction

The application of data mining to the criminal law mining of crimes endangering public security can not only effectively improve the effective definition of legal knowledge, but also play an important role in the qualitative analysis of public security crimes, which is of great significance to the subsequent popularization of legal knowledge and the norms of public behavior.

The development and changes of the industrial revolution and technological transformation have greatly improved the level of productivity, transformed human life concepts and lifestyles to a certain extent, and also improved living standards and quality of life. While creating productivity unmatched by traditional society, it also creates many new sources of danger, bringing unprecedented material convenience to human beings, and making the spread of technological risks increasingly serious [1]. With the advancement of technology and the improvement of living standards, the dangers people face in life are also strange. The dangers contained in the own system of industrial society have involuntarily mutated into a risk society. At different stages of human social development, the emphasis and inclination of legal protection are also different. In contemporary times, the society is full of various dangers, and the safety of public life and property is increasingly valued and protected, so the application of data mining technology to the law is of great significance [2]. Especially in the context of today's risk society, harmful behaviors against the public are increasing, and necessary measures should be taken in a timely manner for some behaviors that pose a major threat to public security interests and have serious social harm. Although serious consequences have not yet been caused, it is necessary to eliminate in the bud to protect public interests. Especially with the proliferation of cyber crimes, it is difficult for traditional legal supervision to deal with cyber crimes, especially for the qualitative treatment of cyber security crimes [3]. The specific definition of "dangerous" is not specified in the criminal laws of various countries. In the context of crime composition, the word "danger" not only assumes the function of fact-finding, but also bears the function of value judgment, which means the possibility of suffering damage or failure [4]. Therefore, it does not mean that causing a specific dangerous state is a "danger" regulated by the criminal law. The dangerous state itself must also meet the needs of value judgment; that is, the harmful behavior must also cause the danger of infringing on specific legal interests. Taking the legal explosion as an example, although it also causes danger, it is not a danger of harming public safety, so we can deny the existence of this "danger" from the perspective of value. Similarly, when judging whether a certain danger meets the requirements of dangerous criminals, it is necessary to judge from the dual functions of fact and value, and one-sided emphasis on one is biased behavior [5].

Safety has become a common concern and a more sensitive topic in the whole society. From the field of transportation to the field of medicine and health, the field of environment and the field of food safety and then to the field of production and operation, dangerous events emerge in an endless stream in society. As the last line of defense in social control, criminal law sets up crimes against public safety in dealing with dangers and is committed to combating criminal acts that threaten or harm public safety, so as to protect the legal interests of public safety. However, with the social changes, illegal and criminal behaviors are also full of tricks. Stealing manhole covers, driving to touch porcelain, racing cars, producing and selling toxic and harmful food and raw materials, and drunk driving and other dangerous behaviors collide with our fragile sense of security and panic. At the same time, the current situation of judicial organs dealing with dangerous crimes and convicting crimes against public security has also caused certain social anxiety, which not only makes people feel the special effect of criminal law sanctions on dangerous acts, but also causes people to worry about the abuse of judicial power [6]. In the face of these new behaviors that were not predicted at the time of legislation, the crime of endangering public safety by dangerous methods has become an important means for judicial organs to govern risky society. Is it based on reasonable interpretation and application of criminal law? Do some radiation radii violate the principles of criminal law?. How can we ensure that the crime of endangering public safety by dangerous methods always adheres to the bottom line of the principle of legality of crime and punishment? How to ensure the instrumental nature of the criminal law in an authoritarian society, to play the normative role of the criminal law in the response to social crises, to achieve the purpose of the criminal law, and to ensure the freedom and tranquility of citizens without interference to the greatest extent cannot help but lead people to think about it; in the face of various behaviors, how to define criminal behavior requires some support from data mining technology [7].

Literature [8] pointed out that public legal interests include social legal interests and national legal interests, while social legal interests are the abstraction or generalization of individual legal interests and form a separate field within this scope. For public security crimes in social legal interests, the legal interests to be protected are the safety of the life, body, and property of the public, and public danger is defined as the possibility of infringing the lives, bodies, and property of unspecified or most people. The qualitative analysis of the crime of public security provides a theoretical basis. Literature [9] pointed out that the general public danger crime is a crime that violates the life, body, or important property of unspecified or most people, and it is aimed at this social legal interest called compound personal interest, rather than abstract social interest. And social system is also a kind of qualitative analysis behavior, in line with the algorithm conditions of data mining. Reference [10] believes that "unspecific or majority people" can achieve the goal of combating public safety crimes, and the core lies in the majority of objects. The understanding of unspecific refers to the unspecific nature of the criminal object, as well as the unspecified results of specific harm. For a specific crime object, it has caused unspecified harmful results beyond the scope of the specific crime object. Although the actual result is beyond the original intention of the perpetrator, it actually endangers public safety. For the understanding of public danger, we should not only take into account the purely objective and physical dangers, but also pay attention to the psychological factors, that is, to identify the public danger concept by capturing the insecurity of ordinary people, which requires data mining algorithms to carry out behavior classification processing [11]. Regarding the understanding of data mining for dangerous data processing, the literature [12] pointed out that there are two different understandings: one is the behavioral risk theory that the behavior produces the danger of infringing the protected interests, and the other is that the actor is antagonistic, that is, the theory of danger of dangerous actors in society. With the development of the objectivist criminal law theory, the behavioral risk theory gradually replaces the perpetrator's risk theory. There is a debate about behavioral risk and resultant risk in terms of understanding the nature of risk. Behavioral a worthlessness theory believes that danger should be an attribute of behavior, the judgment of danger should be based on prior standards, and the objective facts at the time of the behavior and the subjective knowledge of the actor at that time should be used as the basis for judgment; the result agnosticism: the danger originates from the result of the behavior, and the specific situation produced by the behavior is used as the basis for behavior judgment. The risk theory of behavior attribute judges the possible harm caused by a criminal act to an object based on specific facts and behaviors as the object of judgment; as a result, the risk theory believes that danger is an objective state of actual existence, not only to determine whether the danger exists, but also to determine the degree to which the danger exists. Whether it is a possibility or a high probability, and the degree of a high probability of identifying a danger is used as the basis for punishing crimes, which also provides a classification basis for the data mining model [13]. The degree of specific danger has reached a certain standard, which is the necessary condition for the establishment of an abstract dangerous crime; the fact that the specific danger has a very serious degree is the prerequisite for the establishment of a specific dangerous crime, which is also a necessary condition in the legal data mining model. For the specific circumstances of the behavior at the time, the degree of specific danger should be determined according to the judgment of the general public [14]. The potential danger of carrying out acts against specific legal interests of specific dangers materializes into a critical situation. The typical danger arising from a specific behavior should be based on the characteristics of the specific case to examine the existence of the specific danger, rather than relying on general experience to judge. These various behaviors are difficult to judge by the way of thinking, and the amount of data is huge. This problem can be effectively solved by data mining algorithm [15]. Literature [16] pointed out that the following consensuses have been formed in modern criminal policy regarding the handling of crimes: first, legislation is to avoid unnecessary behaviors as crimes, to ensure that the seriousness of punishment is accepted by ordinary people, and the criminal law establishes criminal behaviors. It should only be limited to the minimum range necessary to maintain social public order; secondly, citizens' loyalty to the law should far outweigh their preference for criminism, if people are still guilty of crimes that are detrimental to the order maintained by the law. If the public security is endured enough, then public safety should not be evaluated as a threat in the criminal law; thirdly, for minor crimes, a summary procedure should be applied to entrust administrative agencies to deal with them, while judicial agencies should focus on dealing with more serious crimes. Classification conditions can effectively solve these problems.

This paper uses the mining algorithm to analyze legal issues of the crime of endangering public safety problem, builds an intelligent analysis model, and promotes the research efficiency of legal issues of the crime of endangering public safety problem.

2. Improvement of Mining Algorithm for Legal

2.1. Wave Function Form of Edge State and Its Evolution. This paper improves the algorithm based on the actual needs of legal mining. When the Hamiltonian solves its duration equation to get the eigenvalues, the zero-energy solution can be found in the case of open boundaries. In this section, we will see the wave function characteristics of the zero-energy solution, which satisfies the large amplitude at both ends of the chain and then decays toward the middle power series of the chain. Therefore, we call such a state an edge state, and the corresponding other non-zero-energy eigenstates are body states.

The dynamic defect generation in a one-dimensional topological model with periodic boundary conditions is analytically calculated using the Fourier transform and the LZ transition mechanism. But under finite-length open-boundary conditions, it is no longer possible to use the Fourier transform to decouple the different k. This makes the analysis more difficult to calculate, there is a non-negligible coupling between the energy levels, and the two-level situation can no longer be used for analysis. When $J_0 = -1$ is fixed, the uniform modulation of J_1 is from -5 to 5, the entire evolution process. The time is 2τ, that is, $J_1 = 5t/\tau$, and the numerical calculation of defect density of $N = 200$ is shown in Figure 1. It can be seen from the figure that the defect density after the superposition of bulk and edge states produces periodic oscillations.

Among them, the body state is diffuse in real space, while the edge state has strong locality.

First, we write the duration equation for the Hamiltonian:

$$H|\phi_n\rangle = E_n|\phi_n\rangle = 0. \tag{1}$$

Among them, the eigenstate is

$$|\phi_n\rangle = \sum_n c_n|n\rangle. \tag{2}$$

When solving this equation, due to the special symmetry of the Hamiltonian, we can obtain the recurrence relation:

$$\begin{aligned} J_0 c_{2l-1} + J_1 c_{2l+1} + J_3 c_{2l+3} &= 0, \\ J_0 c_{2l} + J_1 c_{2l-2} + J_3 c_{2l-4} &= 0. \end{aligned} \tag{3}$$

The odd-numbered and even-numbered lattice points satisfy the recurrence relation and actually correspond to the two decoupled Majorana modes that can be obtained after the transformation of the Hamiltonian.

When $J_0 = -1$ is fixed, the uniform modulation of J_1 is from -5 to 5, the entire evolution process. The time is 2τ. For the finite number of lattice points, considering the boundary conditions, the equation has no solution. Only in the limit of $N \longrightarrow \infty$ can there be a strict zero-energy solution. When N is finite, we can get solutions very close to zero energy. In the limit of $N \longrightarrow \infty$, the recurrence relation has the characteristic equation:

$$J_0 + J_1 q + J_3 q^3 = 0. \tag{4}$$

This characteristic equation means that the coefficients of the wave function satisfy the relation of the proportional sequence. This quadratic equation can be solved:

$$q \pm = \frac{-J_1 \pm \sqrt{J_1^2 - 4J_0 J_3}}{2J_3}. \tag{5}$$

According to the two solutions of the characteristic equation, the coefficients of the eigenstate can be obtained:

$$c_{2l-1} = C_1 q_+^l + C_2 q_-^l. \tag{6}$$

Since our model is the long-chain large-N limit, it must satisfy $|q \pm| \leq 1$. The even-numbered characteristic equations are obviously symmetrical to the odd-numbered ones, and the difference is that they are arranged in equal proportions from the other end of the chain inward. Such symmetry guarantees the consistency of the wave functions of the two degenerate zero-energy edge states. Moreover, they are arranged according to the same ratio of power series decay at odd (1, 3, 5) and even grid points $(\ldots N-4, N-2, N)$, respectively.

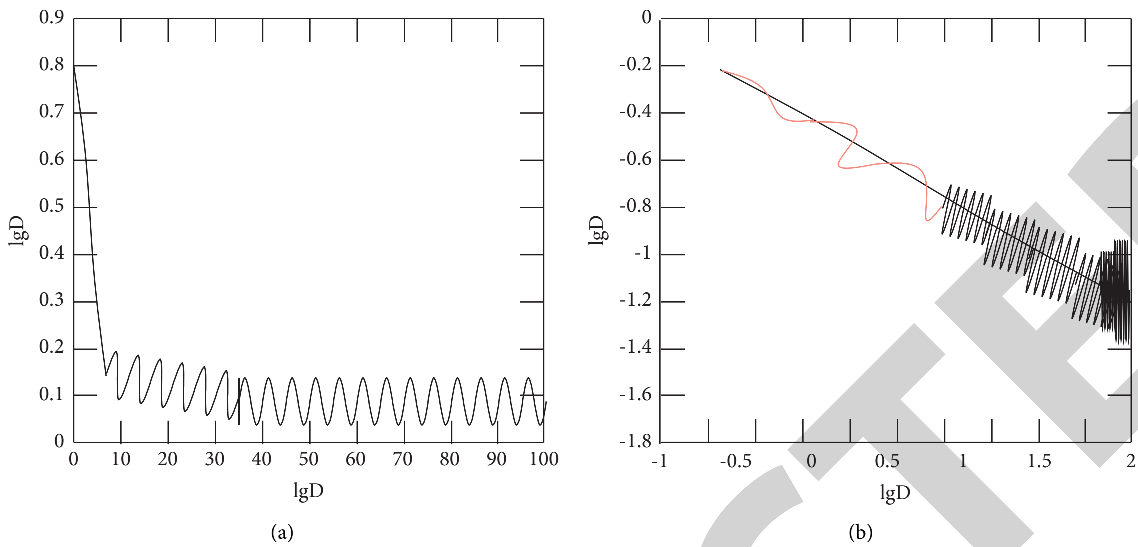


Figure 1: The relationship between defect generation and time under open-boundary conditions. When the initial state is $J_1 = -5$, the full lower-band body state and the two degenerate edge states are equally weighted superposition.

Using the summation formula of the proportional series, we can normalize the obtained marginal state distribution. Under the given conditions of $J_3 = 1$ and $J_0 = -1$, $J_1 < 0$, we can obtain two edge states:

$$\begin{aligned} |\phi_{\text{odd}}\rangle &= \sqrt{1-q^2}\sum_{l=1} q^{l-1}|2l-1\rangle, \\ |\phi_{\text{even}}\rangle &= \sqrt{1-q^2}\sum_{l=1} q^{l-1}|N-2l+2\rangle, \\ q &= \frac{-J_1-\sqrt{J_1^2+4}}{2}. \end{aligned} \tag{7}$$

Any state in the subspace spanned by these two edge states can be written as

$$|\varphi\rangle = \alpha|\phi_{\text{odd}}\rangle + \beta|\phi_{\text{even}}\rangle. \tag{8}$$

For the double degeneracy, according to the Wilczek–Zee theory, the evolution relation of the coefficients in formula (8) is

$$M\cdot\partial_t\begin{bmatrix}\alpha\\ \beta\end{bmatrix} = \wedge\begin{bmatrix}\alpha\\ \beta\end{bmatrix}. \tag{9}$$

Among them,

$$\begin{aligned} M &= \begin{bmatrix}\langle\phi_{\text{odd}}|\phi_{\text{odd}}\rangle & \langle\phi_{\text{odd}}|\phi_{\text{even}}\rangle\\ \langle\phi_{\text{even}}|\phi_{\text{odd}}\rangle & \langle\phi_{even}|\phi_{\text{even}}\rangle\end{bmatrix}, \\ \wedge &= -\begin{bmatrix}\langle\phi_{\text{odd}}|\partial_t|\phi_{\text{odd}}\rangle & \langle\phi_{\text{odd}}|\partial_t|\phi_{\text{even}}\rangle\\ \langle\phi_{\text{even}}|\partial_t|\phi_{0\ dd}\rangle & \langle\phi_{\text{even}}|\partial_t|\phi_{\text{even}}\rangle\end{bmatrix}. \end{aligned} \tag{10}$$

According to Expression 7 of the edge state, we can get

$$\begin{aligned} \langle\phi_{\text{odd}}|\phi_{\text{odd}}\rangle = \langle\phi_{\text{even}}|\phi_{\text{even}}\rangle &= 1, \\ \langle\phi_{\text{odd}}|\phi_{\text{even}}\rangle &= 0. \end{aligned} \tag{11}$$

In addition to this, there is an inner product that includes the derivative.

$$\begin{aligned} \langle\phi_{\text{odd}}|\partial_t|\phi_{even}\rangle &= 0|, \\ \langle\phi_{\text{odd}}|\partial_t|\phi_{\text{odd}}\rangle = \langle\phi_{\text{odd}}|\frac{\partial q}{\partial t}\frac{\partial}{\partial q}|\phi_{\text{odd}}\rangle &= -\frac{5}{2\pi}\left(1+\frac{J_1}{\sqrt{J_1^2+4}}\right)\langle\phi_{\text{odd}}|\frac{\partial}{\partial q}|\phi_{\text{odd}}\rangle, \\ &= -\frac{5}{2\pi}\left(1+\frac{J_1}{\sqrt{J_1^2+4}}\right)\left[\frac{-q}{1-q^2}+\left(1-q^2\right)\sum_{l=1} lq^{2l-1}\right] = 0 \\ &= \langle\phi_{\text{even}}|\partial_t|\phi_{\text{even}}\rangle. \end{aligned} \tag{12}$$

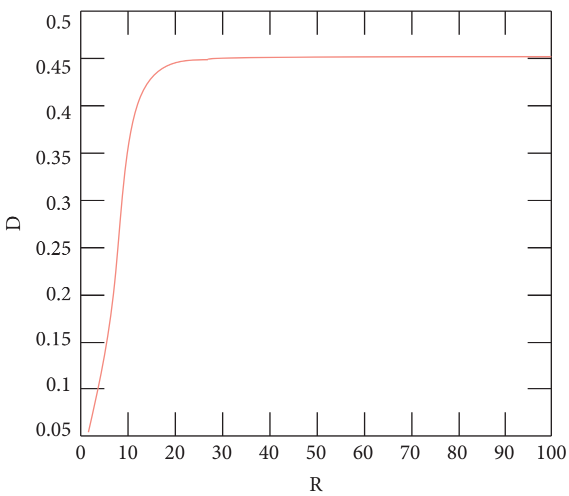


Figure 2: The relationship between defect density of edge states and training time. $N = 200$, $J_0 = -1$, $J_3 = 1$, $J_1 = 5t/\tau$, $-\tau \leq t \leq \tau$ is uniform modulation, and the initial state is equal-weight superposition of edge states of odd and even lattice points.

Among them, the sequence at the long-chain limit is summed:

$$\lim_{n \longrightarrow \infty} \sum_{l=1}^{n} l q^{2l-1} = \frac{q}{\left(1 - q^2\right)^2}. \tag{13}$$

After the evolution matrix is determined by these values, we can get

$$\partial_t \begin{bmatrix} \alpha \\ \beta \end{bmatrix} = 0. \tag{14}$$

This means that after we choose a state that is superimposed by two edge states, the coefficients of this state on the two edge states are fixed over time. When the initial state is $|\phi_{0\mathrm{dd}}\rangle$ or $|\phi_{\mathrm{even}}\rangle$, it always evolves along that eigenstate, and no additional phase is generated when the initial state is the superposition of the two.

Now, we examine the survival of edge states after evolution under the KZ paradigm. According to the above discussion, we can find the edge states for $J_1 < 0$ and $J_1 > 0$ cases, respectively. We denote the side of $t < 0$ as $s\widehat{q}$ and the side of $t > 0$ as $\widehat{q}'$. Under the condition that the modulus of the two is guaranteed to be less than 1,

$$\begin{aligned} \widehat{q}, &= \frac{-J_1 - \sqrt{J_1^2 + 4}}{2}, \\ \widehat{q}', &= \frac{-J_1 + \sqrt{J_1^2 + 4}}{2}. \end{aligned} \tag{15}$$

We denote the value of the two boundary parameters of morality-law as $J_1 = \mp \widehat{J}_1$. When it is substituted into formula (15), there is $\widehat{q}' = -\widehat{q}$.

The size of the inner product of the edge states on both sides of the legal region is

$$\begin{aligned} \langle \phi_{0\mathrm{dd}}(-\widehat{t}) | \phi_{0\mathrm{dd}}(\widehat{t}) \rangle &= \left(1 - \widehat{q}^2\right) \sum_{l=1} \left(-\widehat{q}^2\right)^{l-1} \\ &= \frac{1 - \widehat{q}^2}{1 + \widehat{q}^2}. \end{aligned} \tag{16}$$

When the evolution speed is very fast, that is, when $\tau \longrightarrow 0$, the legal area is very large, $\widehat{q} \longrightarrow 0$, and $\langle \phi_{0\mathrm{dd}}(-\widehat{t}) | \phi_{0\mathrm{dd}}(\widehat{t}) \rangle \longrightarrow 1$ in formula (16) can be obtained. On the contrary, if $\tau \longrightarrow \infty$, $\langle \phi_{0\mathrm{dd}}(-\widehat{t}) | \phi_{0\mathrm{dd}}(\widehat{t}) \rangle \longrightarrow 0$. That is, in faster evolution, the survival rate of edge states is higher, and the defect rate caused by edge states is lower. In very slow evolution (moral evolution), the survival rate of edge states is rather low, and thus the defect rate caused by edge states is high. This is also contrary to the expectation of the defect of the KZ mechanism in the general sense. The defect density of the edge states is shown in Figure 2.

When the system is far from the phase transition point, the mutual coupling can be ignored due to the large energy-level difference, so the relationship between the body state and the edge state can be approximately regarded as the moral evolution. For the moral system, we write the Schrödinger equation:

$$i \frac{d}{dt} |\Psi(t)\rangle = H(t) |\Psi(t)\rangle. \tag{17}$$

The eigenvalue equation that satisfies the Hamiltonian for the eigenstate $|\phi_n(t)\rangle$ is

$$H(t) |\phi_n(t)\rangle = E_n(t) |\phi_n(t)\rangle. \tag{18}$$

In these two equations, the Hamiltonian is time-dependent. The general solution to the Schrödinger equation can be written as a linear superposition of $|\phi_n(t)\rangle$ with phase:

$$|\Psi(t)\rangle = \sum_n c_n(t) e^{-i \int_0^t E_n(\tau) d\tau} |\phi_n(t)\rangle. \tag{19}$$

The time-dependent coefficient $c_n(t)$ can be found as follows:

$$\begin{aligned} i \frac{d}{dt} |\Psi(t)\rangle &= i \sum_n \left[\dot{c_n}(t) |\phi_n(t)\rangle + c_n(t) |\dot{\phi_n}(t)\rangle \right] \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right] \\ &\quad + \sum_n c_n(t) E_n(t) |\phi_n(t)\rangle \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right] \\ &= i \sum_n \left[\dot{c_n}(t) |\phi_n(t)\rangle + c_n(t) |\dot{\phi_n}(t)\rangle \right] \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right] \\ &\quad + \sum_n c_n(t) H(t) |\phi_n(t)\rangle \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right] \\ &= H(t) |\Psi(t)\rangle + i \sum_n \left[\dot{c_n}(t) |\phi_n(t)\rangle + c_n(t) |\dot{\phi_n}(t)\rangle \right] \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right]. \end{aligned} \tag{20}$$

Comparing with the time-dependent Schrodinger equation, we can get

$$i \sum_{n} \left[\dot{c}_n(t) \left| \phi_n(t) \right\rangle + c_n(t) \left| \dot{\phi}_n(t) \right\rangle \right] \exp\left[-i \int_0^t E_n(\tau) \mathrm{d}\tau \right] = 0. \tag{21}$$

The coefficients can be found using formula (21):

$$\begin{gathered} \dot{c}_m(t) = -\sum_{n} c_n(t) \left| \phi_m(t) \right\rangle \left| \dot{\phi}_n(t) \right\rangle \\ \exp\left[i \int_0^t E_m(\tau) \mathrm{d}\tau - i \int_0^t E_n(\tau) \mathrm{d}\tau \right]. \end{gathered} \tag{22}$$

Among them, $\langle \phi_m(t) | \dot{\phi}_n(t) \rangle$ can be found using the derivative of the eigenequation:

$$\dot{H}(t) \left| \phi_n(t) \right\rangle + H(t) \left| \dot{\phi}_n(t) \right\rangle = \dot{E}_n(t) \left| \phi_n(t) \right\rangle + E_n(t) \left| \dot{\phi}_n(t) \right\rangle. \tag{23}$$

Taking the inner product of formula (23) and $|\phi_m(t)\rangle$, we get

$$\begin{aligned} &\langle \phi_m(t) | \dot{H}(t) | \phi_n(t) \rangle + E_m(t) \langle \phi_m(t) | \dot{\phi}_n(t) \rangle \\ &\quad = \dot{E}_n(t) \delta_{mn} + E_n(t) \langle \phi_m(t) | \dot{\phi}_n(t) \rangle. \end{aligned} \tag{24}$$

For $m \neq n$, after shifting the term, we get

$$\langle \phi_m(t) | \dot{\phi}_n(t) \rangle = \frac{\langle \phi_m(t) | \dot{H}(t) | \phi_n(t) \rangle}{E_n(t) - E_m(t)}, m \neq n. \tag{25}$$

From this, the differential equation obeyed by $C_m(t)$ is obtained:

$$\begin{aligned} \dot{c}_m(t) &= -c_m \langle \phi_m(t) | \dot{\phi}_m(t) \rangle \\ &- \sum_{n \neq m} c_n(t) \frac{\langle \phi_m(t) | \dot{H}(t) | \phi_n(t) \rangle}{E_n(t) - E_m(t)} \exp\left[-i \int_0^t \left[E_n(\tau) - E_m(\tau) \right] d\tau \right]. \end{aligned} \tag{26}$$

The solution to the Schrodinger equation in formula (26) is still exact. We perform a moral approximation:

$$\left\| \frac{1}{E_n(t) - E_m(t)} \frac{\langle \phi_m(t) | \dot{H}(t) | \phi_n(t) \rangle}{\langle \phi_m(t) | H(t) | \phi_n(t) \rangle} \right\| \ll 1. \tag{27}$$

Under the inequality conditions of this moral approximation, we can get

$$\dot{c}_m(t) \simeq -c_m(t) \langle \phi_m(t) | \dot{\phi}_m(t) \rangle. \tag{28}$$

The general solution to differential equation (28) is

$$\begin{aligned} c_m(t) &= c_m(0) e^{i\gamma_m(0,t)}, \\ \gamma_m(0,t) &= i \int_0^t \langle \phi_m(t) | \dot{\phi}_m(t) \rangle \mathrm{d}\tau. \end{aligned} \tag{29}$$

Finally, we can get the time-dependent moral evolution equation:

$$|\Psi(t)\rangle \simeq \sum_{m} c_m(0) \left| \phi_m(t) \right\rangle \exp\left[i\gamma_m(0,t) - i \int_0^t E_m(\tau) \mathrm{d}\tau \right]. \tag{30}$$

If the initial state of the wave function of the system is assumed to be the nth eigenstate, that is, $c_m(0) = \delta_{mn}$, we can get

$$|\Psi(t)\rangle \simeq \left| \phi_n(t) \right\rangle \exp\left[i\gamma_n(0,t) - i \int_0^t E_n(\tau) \mathrm{d}\tau \right]. \tag{31}$$

According to the moral evolution formula (30), we can write the phase difference between the wave function and the initial state in the process of moral evolution.

2.2. Bulk Defect Density for Open Boundaries. In the open-boundary case of finite-length chains, the Hamiltonian cannot be decoupled in k-space. The body energy levels are no longer decoupled from each other, and the transition probability of a single energy level can no longer be described by the LZ formula. We select the energy levels with the same numbers as the periodic boundary conditions and numerically calculate their transition probabilities for comparison.

In addition to this factor, the different energy-level connection structures of the system are also different from that of the periodic boundary. The band top of the negative energy band and the band bottom of the positive energy band are both connected to the edge states on the other side of the phase transition point, and there is a mutual energy-level crossing. This undoubtedly makes the transition process incompatible with the LZ formula.

As can be seen in Figure 3, the transition probability of single-level behavior still conforms to the exponential form of $e^{\delta\tau}$, but the coefficient 8 in the exponent cannot be directly determined because there is a certain probability of transition to other energy-level pairs and edge states. We can refer to the calculation method at the periodic boundary, extract the energy gap size between a certain energy level and its symmetric energy level from the energy spectrum, and then substitute it into the LZ formula. The transition probability at the periodic boundary is completely consistent with the LZ formula, but under the condition of open boundary, the half of the minimum energy gap of No. 98, 90, and 80 and their symmetric energy levels are 0.093, 0.341, and 0.642, respectively. Their squares are clearly not proportional to the slopes in the natural logarithm plot and are far from the periodic boundaries.

According to the analysis of the KZ paradigm, we can easily know that for the nonequilibrium evolution process, the system wave function change can be divided into three evolution intervals, namely, morality-law-morality. The wave function of the system is approximately assumed to be

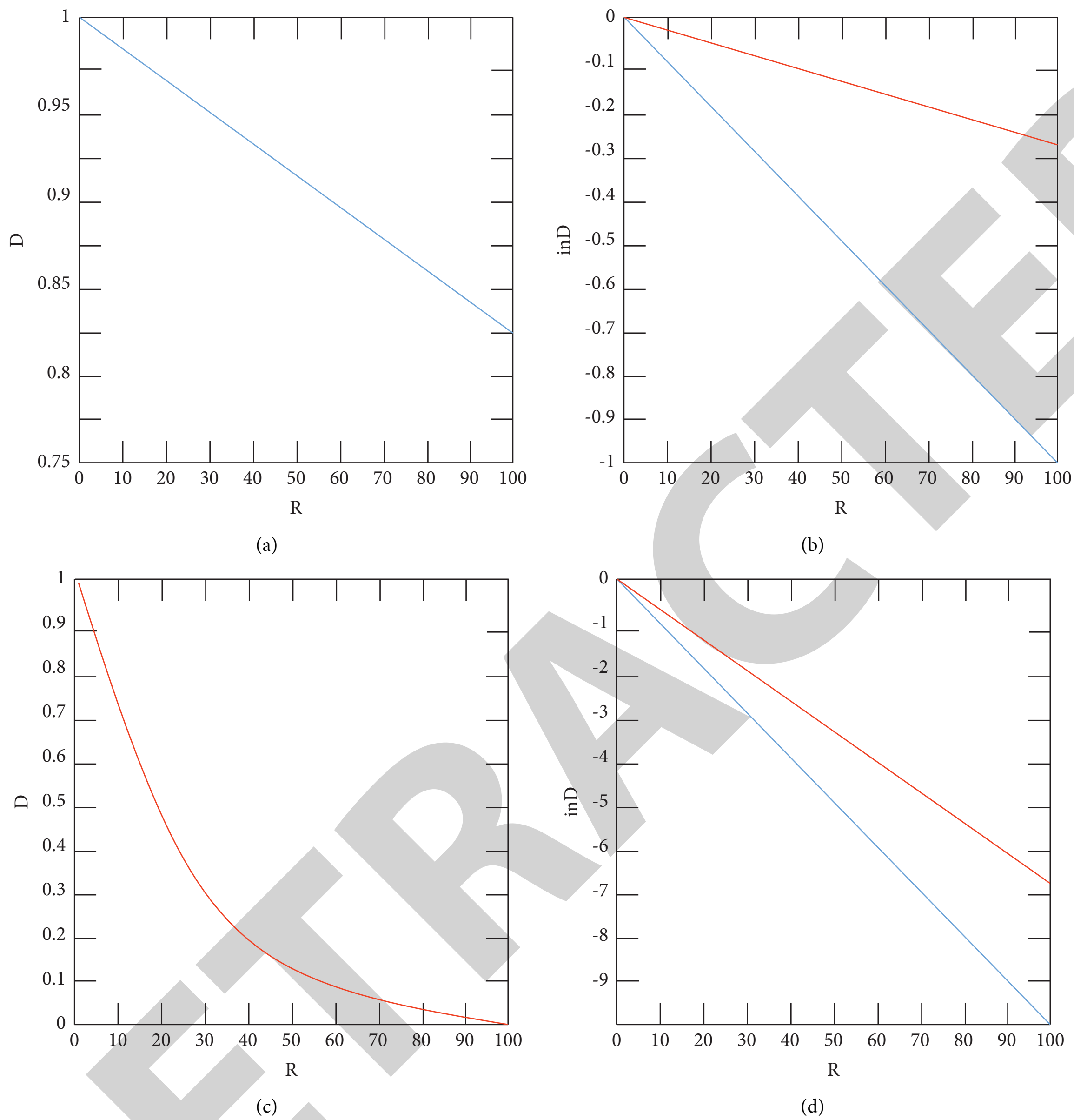
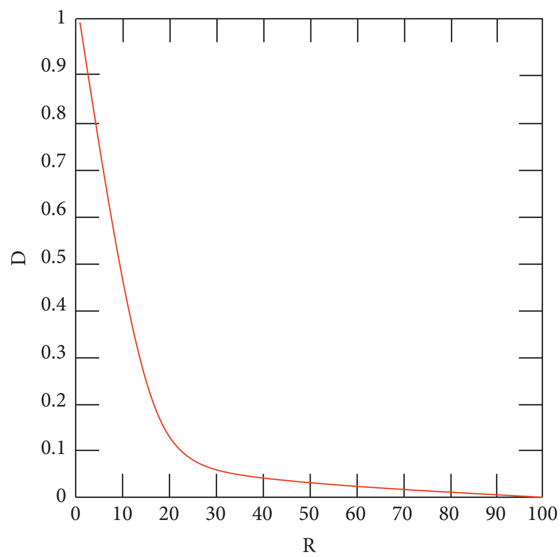
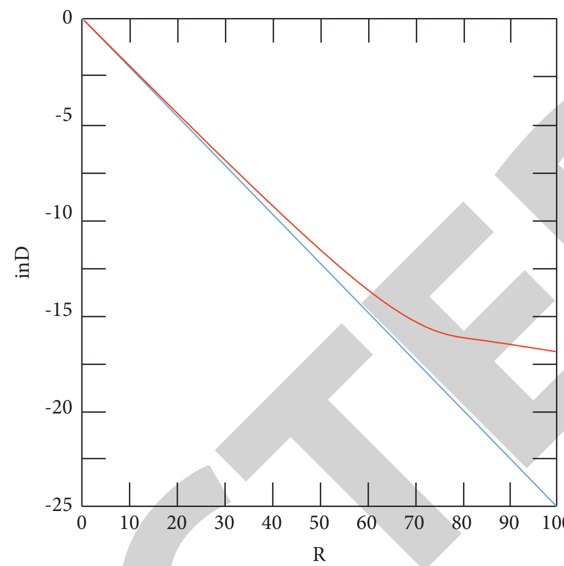


Figure 3: Continued.



(e)



(f)

FIGURE 3: The relationship between single-level evolution defect density and training time τ with open-boundary condition; the parameter settings are the same as Figure 4. $N = 200$, $J_0 = -1$, $J_3 = 1$, $J_1 = 5t/\tau$, $-\tau \leq t \leq \tau$ is uniform modulation. (a) and (b) The blue line is the defect density and logarithm of level 98 under open-boundary condition, and the red line is the logarithm of defect at level 98 under periodic boundary condition. (c) and (d) correspond to energy level 90, (e) and (f) correspond to energy level 80, and other parameters are the same as (a).

unchanged within the legal interval. However, in the two moral intervals of $t < -\hat{t}$ and $t > \hat{t}$, starting from the initial state of an eigenstate, the system evolves along the eigenstate and gradually changes the phase of the wave function. In the usual case, the calculation of defect density involves only modulo squares, and such a phase is not valid. However, it will be seen later that when it comes to the evolution of edge states, the calculation of defect density will include interference terms with explicit phase. The respective phases of the edge state and the bulk state determine the oscillation characteristics of the defect density. Figure 4 shows a numerically calculated defect density image of the body state.

We analyze the posture and approximate the law in the KZ paradigm using the moral evolution formula, and we can get

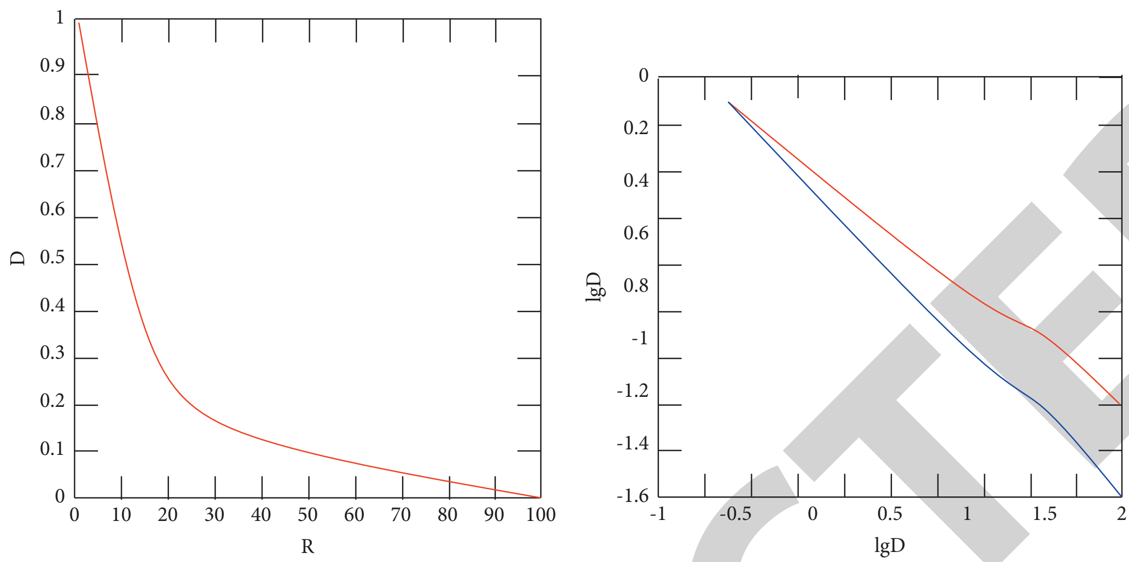
$$|\mathrm{Bulk}(\tau)\rangle = \sum_{l=1}^{N} e^{-i\int_{\hat{t}}^{\tau} E_l(t)dt} \cdot e^{i\gamma_l(\hat{t},\tau)} \left[\sum_m c_m(-\tau) \cdot e^{-i\int_{-\tau}^{-\hat{t}} E_m(t)dt} \cdot e^{i\gamma_m(-\tau,-\hat{t})} \cdot \langle \phi_l(\hat{t}) | \phi_m(-\hat{t})\rangle\right] \cdot |\phi_l(\tau)\rangle. \tag{32}$$

Among them, $c_m(-\tau)$ is the distribution of the system wave function in each eigenstate at the beginning of the evolution, and we take it as the equal-weight superposition of each energy level in the negative energy band. The expression here writes that the state vector is phased when going through the moral process, and the coefficients when the new eigenstate is the basis vector are redistributed through the inner product term in the legal interval.

Since our Hamiltonian is a real matrix, $\langle \phi_l | n\rangle$ is a real number, and using $1 = \sum_n |n\rangle\langle n|$, we can get the geometric phase to be 0 in formula (32):

$$\begin{aligned} \gamma_l &= \int \langle \phi_l | \dot{\phi}_l\rangle \mathrm{d}t = \int \langle \phi_l | d | \phi_l\rangle \\ &= \sum_n \int \langle \phi_l | n\rangle \langle n | d | \phi_l\rangle \\ &= \int \sum_n \frac{1}{2} d \left|\langle \phi_l | n\rangle\right|^2 \\ &= 0. \end{aligned} \tag{33}$$

The energy spectrum made by the Hamiltonian has a relatively obvious feature that can be used to simplify the calculation of the integral. Therefore, it is analytically complicated to perform transition processing between multiple energy levels. Considering the relative regularity of our energy spectrum structure, in the far-side moral region where the phase contribution is relatively large, the energy levels in the upper and lower energy bands are very dense, and the form approximates a linear function proportional to the modulation parameter. Moreover, the larger contribution to the transition comes from the energy levels closer to the band top and bottom. Therefore, the upper and lower energy bands can be regarded as one energy level for simplified calculation. Specifically, for the training process where the initial and final positions of J_1 are -5 to 5, the expression for the energy in the upper energy band component in formula (32) can be written as



(a) (b)

Figure 4: The relationship between defect density and training time of body postures under open-boundary conditions. $N = 200$, $J_0 = -1$, $J_3 = 1$, $J_1 = 5t/\tau$, $-\tau \le t \le \tau$ is a uniform modulation, and the initial state is an equal-weight superposition of all lower energy band states.

$$E_n(t) \sim \frac{5t}{\tau}. \tag{34}$$

After the energy is no longer related to the energy-level number, it can be taken from the summation as the common phase. When it is substituted into formula (32), we can get the component of the desired state in the positive energy band:

$$\begin{aligned} \left|\mathrm{Bulk}^+(\tau)\right\rangle &\sim \frac{1}{\sqrt{N/2-1}} e^{i\theta_1} \cdot e^{i\theta_2} \sum_{l} \sum_{m=1}^{N/2-1} \langle \phi_l(\hat{t}) | \phi_m(-\hat{t}) \rangle | \phi_l(\tau) \rangle, \\ \theta_1 &= -\frac{5}{2}\left(\tau - \frac{\hat{t}^2}{\tau}\right), \\ \theta_2 &= \frac{5}{2}\left(\tau - \frac{\hat{t}^2}{\tau}\right). \end{aligned} \tag{35}$$

It can be seen that the phase sum contributed by the moral evolution on the left and right sides of the phase transition point is 0, and finally the positive energy band component part of the posture under the KZ paradigm can be obtained:

$$\left|\mathrm{Bulk}^+(\tau)\right\rangle \sim \frac{1}{\sqrt{N/2-1}} \sum_{l=N/2-1}^{N} \sum_{m=1}^{N/2-1} \langle \phi_l(\hat{t}) | \phi_m(-\hat{t}) \rangle | \phi_l(\tau) \rangle. \tag{36}$$

For the classical phase transition, the relaxation time $t_R(\hat{t}) = \chi\hat{t}$, $x = O(1)$ is proposed. The relaxation time is proportional to the inverse of the energy gap, while the energy is approximately linear in the equation. The coefficient β can be found such that

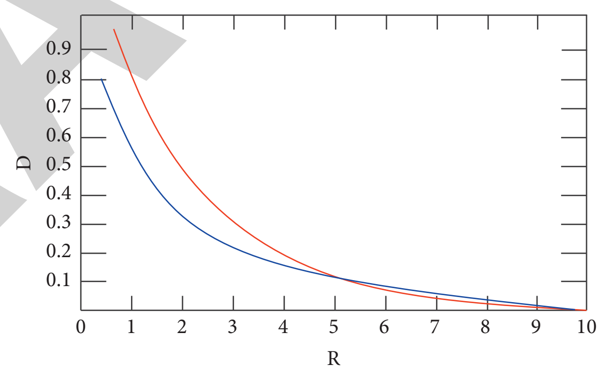


Figure 5: Schematic diagram of the generation of defect density over time. The red is the kinetic evolution value, the blue is the KZ paradigm fitting value, and other parameters are the same as Figure 4.

$$\hat{t} = \sqrt{\frac{\tau}{\beta}}. \tag{37}$$

According to these results, the defect density expression in the KZ paradigm can be determined as

$$D \sim \frac{1}{N/2-1} \sum_{l=N/2+2}^{N} \sum_{m=1}^{N/2-1} \left| \left\langle \phi_l\left(\sqrt{\frac{\tau}{\beta}}\right) \middle| \phi_m\left(-\sqrt{\frac{\tau}{\beta}}\right) \right\rangle \right|^2. \tag{38}$$

We can determine the value of β by fitting with the evolution results of the kinetic equation. The main interval of defect density generation can be seen in the figure as τ in the range of 1 to 10. We fit β by minimum variance in this interval and get $\beta = 32.11$. Figure 5 shows a comparison

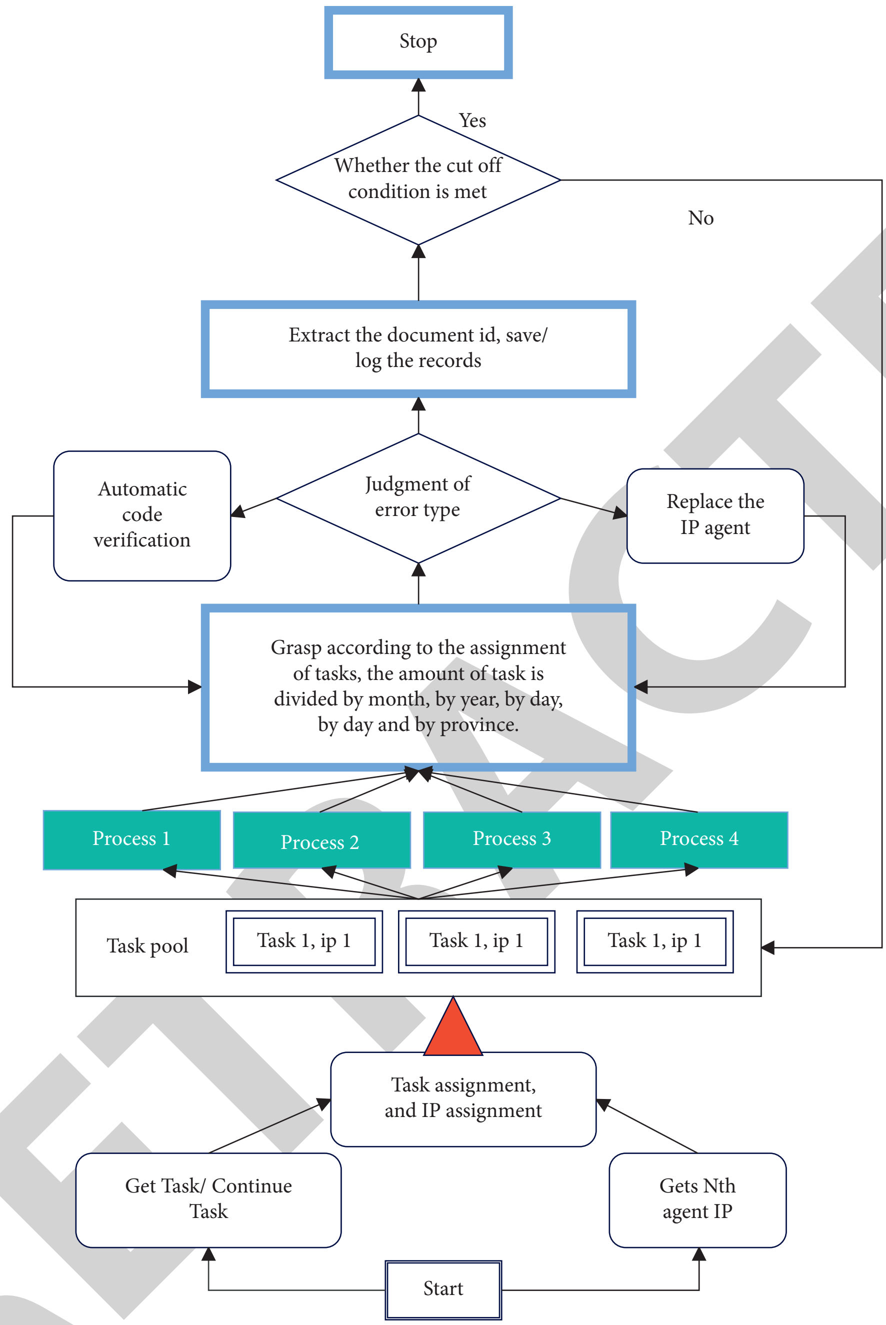


FIGURE 6: Legal document id acquisition module.

diagram of the defect density between the KZ paradigm of the bulk state and the dynamic evolution.

The fidelity is $F = |\langle \Psi(-\hat{t})|\Psi(\hat{t})\rangle|^2$, which measures the "freezing" of the system state in the legal area. When the value of τ does not exceed 10, the fidelity of $\beta = 32.11$ is greater than 0.5. It can be seen that the error source of the KZ paradigm mainly comes from the legal area during the slow training process and mainly from the moral area during the fast training process.

3. Analysis of Legal Problems of the Crime of Endangering Public Safety Based on Data Mining Algorithm

The algorithm of the second part is applied to the mining of legal problems of the crime of endangering public safety. This article assigns a dynamic IP to each process, mainly to prevent access to too many IPs from being restricted. Each process is captured according to the magnitude of the

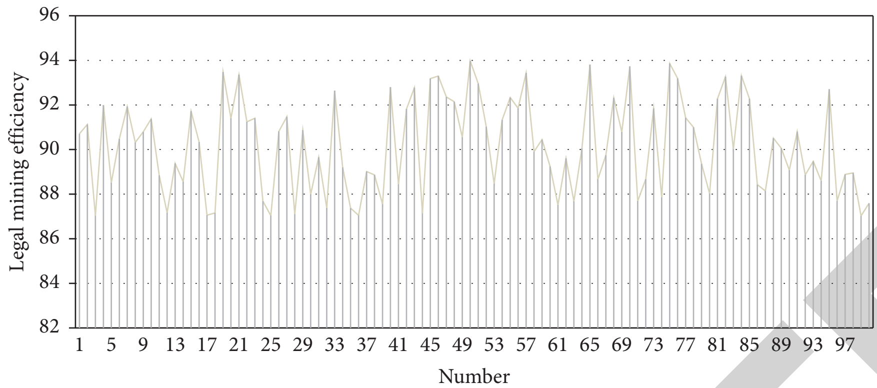


Figure 7: The mining effect of the legal issues of the crime of endangering public safety.

assigned task, which can be divided into monthly, yearly, daily, and provincial captures. For the problem of too many visits, the method adopted is to perform automatic code verification and continue to download after the verification is successful. Secondly, for the IP proxy error, the method taken is to replace the IP proxy and download it again. In addition, for other errors, the strategy is to record the detailed information of the error through the error log and make a record for the subsequent catch-up. After downloading the document, the document id in the extracted document is extracted, the extraction method adopts a rule-based method, and the extracted id is stored in the file to prepare for the subsequent document download. Finally, it is judged whether to end the crawling by whether the task pool is empty. The legal document id acquisition module is shown in Figure 6.

This paper verifies the mining effect of the legal problem of the crime of endangering public safety with the model proposed in this paper, and the statistical verification results are shown in Figure 7.

Through the above simulation research, we can see that the legal problem analysis model of the crime of endangering public safety based on the data mining algorithm proposed in this paper has a good legal data mining effect. Therefore, the model in this paper can be applied to the mining and analysis of legal issues of the crime of endangering public safety.

4. Conclusion

With the increasing number of cases of crime of endangering public safety by dangerous means, the controversy of the crime in the academic circle is also increasing, mainly focusing on the "pocket crime" tendency of the crime. In fact, there are specific reasons why the crime is in the present situation. Although public opinion cannot lead the judiciary, it can influence the judiciary. The fundamental reason for the over-expansion of the crime of endangering public safety by dangerous means in trial practice is that the utilitarian demand for punishing the crime can be met by the sentence of the crime, and it is public opinion that drives this demand. In the face of the impact of public opinion, the judiciary should remain neutral, and the law should guide public opinion rather than the other way around. This paper analyzes the legal issues of the crime of endangering public safety combined with the actual mining algorithm and builds an intelligent analysis model to promote the research efficiency of the crime of endangering public safety.

Data Availability

The labeled dataset used to support the findings of this study can be obtained from the corresponding author upon request.

Conflicts of Interest

The authors declare no conflicts of interest.

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