Krain AI

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Krain

Driving the Infrastructure Layer of the AI Economy

Build intelligent infrastructure to enable seamless discovery,
deployment, and hosting of AI applications.

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Chapter I

Project Background

1.1 Current Status of Artificial Intelligence Market Development

In recent years, the development of the field of artificial intelligence (Artificial Intelligence, AI) can be described as rapid progress, and has now been rapidly integrated into the economy, society, life and other industries, igniting a prairie fire in the world. International Data Corporation (IDC) recently released the "Global Artificial Intelligence Market Biannual Report" predicts that the field of AI will continue to soar in the future, and the AI market will maintain double-digit growth until 2025. Moreover, language, voice and vision technologies, as well as multimodal solutions, will make great strides to revolutionize "human efficiency. According to Next Move Strategy Consulting, the market for AI is so promising that it is expected to grow 20-fold over the next decade. Currently, the AI market is valued at nearly $100 billion, and by 2030, that figure is expected to reach nearly $2 trillion.

Artificial Intelligence refers to the performance by computer systems or machines of tasks that normally require human intelligence to accomplish, such as visual recognition, speech recognition, natural language processing, decision support, and so on. Artificial Intelligence is one of the most innovative and influential technologies in the world today, and it is changing the way of production and lifestyle in all walks of life, bringing great potential and value to economic and social development. Over the past five years, the adoption rate of AI technology by global enterprises has climbed rapidly, growing from only 20% in 2017 to 50% of enterprises that have actively deployed AI solutions today, a leap forward that undoubtedly proves that AI is becoming a core engine for driving industrial innovation and transformation and upgrading.

The development of Artificial Intelligence (AI) in 2024 presents several notable trends, which not only reflect advances at the technological level, but also herald new directions in industry applications and strategic layouts.

- Moving from Artificial Intelligence Big Models to General AI: OpenAI Inc. is developing the next generation of artificial intelligence, which marks a shift from Artificial Intelligence Big Models to General Artificial Intelligence. General-purpose AI is characterized by the ability to self-modify code and adapt to more complex learning tasks, and this intelligence does not rely on data from human activities. This shift could lead to AI that surpasses human-level capabilities in a variety of fields.

- Synthetic data breaks the bottleneck of training data: synthetic data is data synthesized using machine learning models to solve the problem of limited high-quality data when training AI. This trend suggests that synthetic data will become an important direction in the development of AI, helping to improve the performance of AI while reducing the reliance on human data.

- Quantum computers in artificial intelligence: quantum computers could be an important solution for the development of artificial intelligence due to the need for arithmetic power in AI technology. The parallel computing power of quantum computers gives them a potential advantage when dealing with AI algorithms. This suggests that the combination of quantum computing and AI technology may open up new possibilities.

- Comprehensive Application of Artificial Intelligence and More Generalized AI: AI technology is shifting from single-point applications to diversified applications, and going deeper from generalized scenarios to industry-specific scenarios. With the breakthrough of large models of AI and the rise of generative AI, AI's ability to deal with complex problems has been improved, providing more advanced tools and means for various industries. Experts predict that in the future, AI will develop in the direction of greater generalization and efficiency.

The development and application of artificial intelligence technology has become one of the trends in today's society, and its unique advantages and wide range of application areas have brought great business opportunities for market development. With the continuous iterative upgrading of big data technology and the increasing maturity of artificial intelligence algorithms, we have reason to foresee that in the near future, artificial intelligence will play a more central role in the market, create greater value space for enterprises, and promote the city to enter into a completely new era of intelligence.

1.2 Convergence of Blockchain and Artificial Intelligence

Currently, the three key elements of artificial intelligence: data, algorithms, computing power, these are the core driving force to promote the development of artificial intelligence, to build a more open, efficient, economic data, algorithms and computing power market, but also on this basis to promote the circulation of various markets and related identity, regulation and other services, undoubtedly, can greatly promote the development of artificial intelligence, building a diverse ecosystem. In the past, the centralized way to build the corresponding infrastructure, bring excessive centralization, is not conducive to sharing, at the same time will form the corresponding information islands, at the same time, a certain institution or enterprise to build this kind of infrastructure can not do the consensus of the whole society, bring the problem of information opacity, and can not communicate with each other. Blockchain technology, on the other hand, can achieve mass consensus sharing, while protecting the participants' technology, therefore, building a set of artificial intelligence infrastructure based on blockchain technology should be an important direction in the future.

1) Blockchain can facilitate data sharing

Data is the core power of the development of AI, but also the fuel of AI, data is shared by everyone, in order to have richer data to provide, data can only be more efficient flow, in order to create greater value, data can only be owned by the real provider, in order to protect the ownership of the data, in order to incentivize the provision of everyone, and at the same time to ensure that the data is reliable and true, only data power more convenient exchange, in order to improve efficiency. And all of these, need a fair, incentive mechanism can be realized. Blockchain itself has the depository, non-modifiable and economic incentive mechanism to provide a good solution.

2) Blockchain and identity and security

In the current network, human-to-human communication is the main body, and in the future, human-to-machine and machine-to-machine communication and exchanges will become the most common way, and in the world of the Internet of everything, what is lacking is trust and security, and the blockchain can help to build a decentralized, as well as a more efficient and secure identity system, to build a secure authentication for the equipment of the Internet of everything, and to enhance the reliability and traceability of the data source. the development of AI. AI development, similar to ALPHAGO, artificial intelligence body, these AI entities have been stripped of biological attributes, these AI entities can also be connected to the network society, how to carry out identification, blockchain can also help to build the identity system, in the blockchain world, the identity can be hidden, but can not be denied.

Blockchain will enhance the safety mechanism of AI: Blockchain helps AI to realize contract management and improve the friendliness of AI. For example, it allows users of the device to register on the blockchain, and realizes different levels of user access through smart contracts, providing personalized functions for different levels of users. The blockchain ensures that the device can achieve hierarchical access through user registration, which not only prevents the device from being abused, but also prevents the user from being harmed. Co-ownership and co-usage of devices can be better realized through blockchain, which will allow users to jointly set the status of the device and make decisions based on smart contracts.

3) Blockchain and AI Regulation

As mentioned above, blockchain can be a good solution for identity identification, as well as the results of the call can not be tampered with, the results of AI also need to be exported and regulated, and at the same time, the traces of the call access to the AI system can be easily traced on the blockchain, so that the characteristics can help to build a healthier AI system. For the identity given to the AI and the monitoring of the AI, the blockchain can play a fundamental role, while building a credit system based on the blockchain is more effective and credible, so the management of AI combined with the blockchain will inject a healthier factor into the development of AI.

4) Blockchain and AI value exchange

Blockchain itself has the characteristics of openness, fairness and transparency, and transactions in blockchain are more transparent, so building a more transparent transaction market based on blockchain will be more fair, and at the same time, due to the characteristics of universal participation, it will build a broader platform, which will be conducive to the peer-to-peer exchange of value.AI, exchange of data, and the embodiment of value are more easily realized in the world of blockchain, which eliminates information asymmetry and barriers to transactions, as is now the case with Bitcoin and others. Asymmetry as well as barriers to transactions, as is now the case with Bitcoin and others. This will undoubtedly facilitate the accelerated flow of AI and data, and will encourage more people to participate in the provision of AI and data.

Blockchain transactions use a large number of smart contracts, the essence of which is an automatically executed machine, a kind of transaction mechanization and automation, this mechanism is very suitable for the transaction of AI-related products, such as the data provided to the algorithm or model, the results of different AI calculations of the same data, and the process of exchange through the smart contract for the automatic execution of the process, accelerating and optimizing the transaction process, which is more conducive to the AI The exchange process is accelerated and optimized through smart contracts, which is more conducive to the exchange of AI value. Meanwhile, the blockchain itself has an incentive mechanism, and it is easy to realize the measurement of value through TOKEN and so on.

5) Computing power sharing and assistance

The current bitcoin network or ethereum network is undoubtedly a huge pool of computing power, machine learning, especially deep learning algorithms, requires a large amount of computational overhead, and at the same time, deep learning as well as neural network algorithms themselves require multi-node computational synergy, the blockchain itself is a distributed computational resource, and at the same time, the decentralization of the blockchain as well as incentives, can be a better way of managing and sharing computational resources, not only It can not only utilize the computing resources of data centers, but also synergize and share idle and scattered computing resources to build a larger pool of computing resources that facilitates transactions. Meanwhile, with the development of 5G and IOT, edge computing, fog computing and other discrete computing resources need a broader and more trustworthy management network, and blockchain provides a shared, transparent and tradable computing environment to organize these resources. Therefore, building decentralized resource pools with blockchain, while achieving trusted and value-based management, can better utilize all kinds of computing resources, whether they are cloud computing resources or discrete computing resources.

6) Blockchain provides a safe and secure environment for AI to thrive

The issue of data security is one of the obstacles encountered in the further development of AI. If developers do not improve the security of the data they manage, then once the data is exposed, AI will lose its credibility and will eventually be reduced to a glorified technology. Blockchain technology can solve this problem to a great extent.

The smart contract and smart transaction mechanism of blockchain can well perform the functions of privacy protection and data openness and data fusion, which can keep the main body of data transaction information in an encrypted state. At the same time, due to the non-tamperability of blockchain records, it can also facilitate people to query and supervise the records of AI devices, and enhance people's trust and acceptance of AI. In the era of data supremacy, people can extract a lot of valuable information from data. Blockchain and technology can both guarantee the security of data and assist in extracting valuable information. Therefore, blockchain can play a crucial role in improving the aspect of information leakage problem that exists in AI.

First of all, the non-tampering and traceability of blockchain technology makes it possible for every step of the record of the data from collection, transaction, circulation, and calculation and analysis to be retained on the blockchain, and no one can tamper with the data, modify the data, or falsify the data in the blockchain network by any means, which makes the credibility and quality of the data to be backed by a certain degree of credit, and helps AI to carry out high-quality modeling, thus enable users to get a better user experience. Secondly, blockchain technology based on homomorphic encryption, zero-knowledge proof, differential privacy and other technologies enable data sharing with privacy and security protection.

1.3 Web3 and Artificial Intelligence Achieve Each Other

Every technological change is a new round of wealth reorganization. With the integration and development of Web3, blockchain, digital currency, digital economy and artificial intelligence, the new thinking it brings creates higher business value, thus solving many problems in the process of enterprise transformation and entrepreneurship, so innovators are applying blockchain technology in practice to improve the pain points in their own operations. A large number of companies have begun to lay out around Web3, blockchain, artificial intelligence and digital economy in droves, and a new wealth boom is descending.

Overall, Web3 is decentralized, distributed and autonomous in nature, and also supports blockchain technologies such as cryptocurrencies. Currently, Web3 is becoming an important trend and direction. At the same time, artificial intelligence is becoming an important part of Web3, breathing new life into it. Artificial Intelligence (AI) and Web3 can work together to create a more open, transparent and decentralized world.AI can be used in many application scenarios of Web3. For example, AI can be used in smart contracts to provide more reliable automated decision-making capabilities. In addition, AI can be used in decentralized applications (DApp) to provide better user experience and higher quality services. Let's take a look at the new directions that Web3 may be taking in the AI Era.

1) Automated decision making for smart contracts

Smart contracts are an important part of Web3 and are automated through contract codes. These codes can perform operations such as asset transfers, software upgrades, and more. With the help of AI, the automated decision-making capability of these smart contracts will be further enhanced, bringing even stronger benefits to the entire Web3 ecosystem.AI can make intelligent decisions by learning from historical data, thus eliminating human errors. In addition, in the Web3 ecosystem, the execution of smart contracts may involve cooperation and decision-making among multiple parties. In this case, the assistance of AI will be even more indispensable. AI can provide support and suggestions for decision-making between different parties based on relevant data, further improving the efficiency and accuracy of smart contracts.

2) Intelligence for decentralized applications

Decentralized applications (DApp) aim to advance the democratization of the web and data by removing the threat of centrality and enabling a more just distribution of resources. In the Web3 ecosystem, the intelligence of DApps will lead to many important improvements.

On the one hand, through AI technology, DApp will have better adaptability and intelligence. For example, AI can provide more accurate search and filtering functions in DApp, reducing users' search costs and providing users with a better experience. At the same time, AI can also recommend more appropriate content, services and products for users by learning their behavior and habits. On the other hand, the intelligence of DApp can also help users better manage their digital assets. Through AI's analysis and prediction, users can more accurately understand the trends and risks of various digital assets and make smarter investment decisions. On this basis, users can also automatically execute their strategies through relevant smart contracts, thus improving their profitability.

3) Autonomous Intelligence

Autonomy is a very important feature in the Web3 ecosystem. In order to achieve autonomy, it is necessary to use smart contracts and decentralized technology, so that each participant can spontaneously form a community and carry out autonomous management. At the same time, AI will also play an important role in the realization of autonomy; AI can provide reference and suggestions for autonomy management by learning the behavioral patterns and decision-making styles of the community. For example, in DAO (Decentralized Self-Organization), AI can provide more accurate voting and governance suggestions, thus ensuring that the interests of all parties are balanced.

In addition, AI can leverage multiple data sources, including user behavior, social networks, and event history, to build more accurate and comprehensive models of autonomy. These models can help autonomous organizations make better decisions, as well as provide better predictions and solutions for future decisions.

With the rise of Web3, AI technology will breathe new life into it, leading to a more efficient and smarter ecosystem.AI can be used in smart contracts and DApps to provide more reliable and intelligent automated decision-making capabilities. At the same time, AI can also be used in autonomy implementations, injecting more adaptive and autonomizing features into the Web3 ecosystem. These improvements will help drive the development of Web3 and further advance the popularization of blockchain technology and digital assets.

1.4 The Birth of Krain AI

Based on the above background, Krain AI was developed to create a decentralized AI Agent infrastructure integrating discovery, deployment, hosting, trading and governance. The project chooses the fast-developing Base chain as the first network, utilizing its low Gas, strong scalability and friendly development environment to provide a high-performance settlement channel for massive Agent calls.

Krain completes the closed loop with three major technology modules:

- Agent Studio allows any developer to package and chain up multimodal models in minutes;
- The Discovery Engine combines vector search and on-chain reputation to help users pinpoint the smart body that best meets their needs and complete one-click deployment;
- The Execution Layer adopts a distributed arithmetic pool and a trusted execution environment to provide agents with verifiable reasoning and results on the chain. In addition, the platform uses $KRAIN as the value carrier, and designs a multi-dimensional incentive and governance mechanism to encourage developers, node operators, the early community and capital to work together to maintain network security and service quality.

Through a three-in-one strategy of "technology opening, economic sharing, and governance decentralization", Krain AI will promote the sinking of AI capabilities into the hands of global innovators, maximizing the social value of the autonomous intelligence economy while guaranteeing a sustainable business model.

Krain is building the intelligent infrastructure that enables seamless discovery, deployment and hosting of AI applications. With Krain, innovators and organizations can explore, use and host AI applications faster than ever before, driving the next wave of AI-powered automation.

We believe that Krain AI will generate more valuable applications in the future.

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Krain AI

Chapter II

Project Overview

2.1 Project description

Krain AI is a decentralized artificial intelligence agent infrastructure designed for global developers and enterprise users. Its core mission is to empower anyone to build, discover, deploy, and monetize intelligent agents within minutes. The platform is built on the Base blockchain, leveraging its low gas fees, high throughput, and native modularity. Through cross-chain bridges, Krain AI ensures seamless asset and compute migration across networks such as Ethereum and Arbitrum.

Krain AI is structured around three core layers:

Agent Studio – A low-code visual interface combined with multilingual SDKs, allowing developers to quickly encapsulate private models, open-source models, or third-party APIs into callable agents. These agents are then registered on-chain with metadata via smart contracts.

Discovery Engine – Powered by large-scale semantic vector retrieval, runtime performance metrics, and on-chain reputation scores. It generates a real-time, ranked "Agent Marketplace," enabling users to precisely match the most suitable agents for their specific needs.

Execution Layer – Integrates distributed computing nodes, trusted execution environments (TEE), and result verification smart contracts. This ensures that every inference task is verifiable, automatically settled, and transparently auditable.

The user interaction path is straightforward:

- Users connect their crypto wallets to initialize on-chain identities, then browse the AI application portal. By entering keywords or uploading data samples, the Discovery Engine returns optimal agent candidates based on accuracy, latency, and cost.
- Upon one-click deployment, the selected agent runs in a distributed compute pool, with results delivered to the frontend via on-chain receipts.
- All fees are settled in $KRAIN, paid by the invoking party. Developers and compute nodes earn dynamic revenue shares based on performance. Since communication protocols are wallet-address-based, agents can autonomously negotiate task delegation and revenue sharing with each other, forming self-organizing intelligent clusters.

Krain AI also includes a built-in performance dashboard that continuously monitors metrics such as throughput, error rate, and average latency. Reinforcement learning algorithms are used to automatically recommend optimal scaling or replacement strategies, enabling operators to reduce costs while maintaining stability.

Through this integrated system, Krain AI compresses what traditionally required multiple vendors and complex DevOps into a unified on-chain protocol—allowing developers to focus on algorithm innovation, businesses to focus on logic execution, and end users to enjoy secure, transparent, and low-cost intelligent services.

Looking ahead, Krain AI aims to become the operating system for a global digital workforce—ensuring every inference process leaves a trusted on-chain footprint and distributing value fairly to all creators and users.

2.2 Core Value Proposition

Krain AI's core mission is to reshape the ownership, usage and revenue of AI productivity, break the monopoly of cloud platforms, data silos and high-cost barriers, and enable any individual or organization around the globe to create, deploy, trade and collaborate with intelligent agents in a safe, low-threshold and verifiable way, ultimately leading to a decentralized intelligent service-driven inclusive digital economy.

The platform advocates the use of blockchain as a distributed trust base, AI agents as a value anchor, decentralized governance as a synergistic mechanism, and the release of long-term dividends of intelligent arithmetic and algorithmic innovation through on-chain rights confirmation, off-chain credible execution, and an open incentive system:

- In terms of trustworthiness, Krain AI builds a triple guarantee system based on verifiable reasoning, zero-knowledge proof and on-chain result depository to ensure that every model call is traceable and re-testable, and that the inputs are not leaked and the outputs are not tampered with.

- In terms of autonomy, through the Agent registration contract and self-triggered revenue sharing logic, the platform allows each intelligent body to have an independent on-chain address and economic account, and can independently negotiate task splitting, revenue distribution and iterative upgrading, so as to truly become a "digital workforce" on the chain.

- In terms of universal benefits, Krain AI opens up the access thresholds of arithmetic and algorithms: developers can go online as agents with zero license, arithmetic nodes can access the Execution Layer without geographic restriction, and individual users can call on demand and pay according to the volume, thus sharing the dividends of global smart growth.

- In terms of transparency, the platform adopts a full-chain auditable design, whereby the fee settlement curve, incentive pool release strategy, and governance proposal process are all publicly uploaded to the chain, so that any third party can review the data and monitor the security of the agreement in real time.

- In terms of co-creation, Krain AI takes DAO governance, open-source protocols and incentive funds as a handhold, encouraging the community to participate in the improvement of core modules, the development of cross-chain bridges, the donation of industry datasets and the incubation of application scenarios, forming a positive cycle of collaborative innovation ecology.

Compared with traditional AI service platforms, Krain AI redefines the issuance, circulation and revenue rights of algorithmic capabilities with Web3 thinking: model assets are authorized on the chain, the invocation process is verifiable, the revenue is automatically shared, and the governance rights are held by the coin community. Through this mechanism of "credible execution + autonomous economy + transparent governance", Krain AI liberates intelligences from centralized APIs into combinable, circulatable and collaborative on-chain production elements, and builds a new intelligent service network based on AI agents, with decentralized circulation as the path, and consensus-driven as the soul. The new network is based on AI agents, decentralized circulation and consensus-driven.

2.3 Top team co-construction

Krain AI brings together an experienced and visionary founding team of the industry's best experts from various fields such as computers, artificial intelligence, big data, algorithms, information security, communications, mathematics, finance, web development, etc. The team members are experienced in AI underpinnings, distributed databases, cryptographic algorithms, machine learning, and cross-chaining technologies.

1) Technical team

Michael Lee - Ph.D. in Quantum Computing and Artificial Intelligence from the Massachusetts Institute of Technology (MIT) in the U.S., has served as a senior researcher and technical director at Google, IBM, Microsoft and other well-known companies, and is a blockchain, AI, and quantum computing field leaders and authoritative experts in the fields of blockchain, AI and quantum computing.

Wolf Carr - Senior Programmer, PhD in Computer Science at Caltech, Senior Expert in Blockchain Technology Application, DeFi Application Expert. He has rich experience in big data parallel computing and distributed algorithm optimization, and has in-depth research in blockchain, cryptography, and data mining.

Roice Morrison - Program Developer, Senior Engineer in Artificial Intelligence Technology Application, with senior development experience in the field of AI trading network. With 15 years of experience in the Internet, proficient in a variety of computer languages, specializing in the design of long-volume, high-concurrency available architecture, with rich experience in R&D management.

Jeff Smith - a data modeling expert specializing in financial data analytics and modeling. He specializes in applying advanced data analytics techniques and modeling methodologies to provide accurate and in-depth data insights and predictive models for the company or partner organizations.2016-presentResponsible for the development and maintenance of financial data models and algorithms, including market data, trading data, and risk data, to support decision-makingUses statistical analytics and machine learning techniques to build predictive models and risk models to identify market trends, predict risk and optimize investment portfolios.

Chloe Bennett - Senior Engineer in AI technology application, with senior development experience in AI transaction network field. With 15 years of experience in the Internet, proficient in a variety of computer languages, specializing in the design of long-volume, high-concurrency available architecture, with rich experience in R&D management.

Mason Taylor - Security Engineer, worked in top technology companies, has more than 10 years of experience in risk control, specializing in the use of scientific, rigorous and thorough risk control audit standards and methods, comprehensive verification of the real information of customers on the trading station, transaction risk analysis, customer transaction registration audit, digital assets, and the ability to control the assessment of the maximum prevention of undesirable pieces of transactions. We can assess the control ability and prevent the occurrence of undesirable transactions to the greatest extent possible.

2) Consultant Team

Bernice Micallef - a blockchain and wallet technology expert, has been engaged in large-scale system engineering development for a long time in the CoinSec team. And has worked on several crypto digital currency projects. Including the proof-of-concept platform, blockchain explorer, online wallet and one of the largest token mining pools.

Dinesh Singh - Proficient in the principles and implementation of mainstream blockchain technologies such as Bitcoin, Ether, HyperLedger, etc., he has a deep understanding and rich practice of blockchain consensus mechanism, smart contract, cross-chain technology, side-chain technology, privacy protection, etc.

Alston Reed - M.S. in Computer Science from Harvard University, famous blockchain software development engineer, layer responsible for cross-platform porting of mining algorithms for Bitcoin, ETH and other virtual currencies and management of mining machine software development. He has rich experience in virtual digital currency wallet and virtual digital exchange technology architecture.

2.4 Global capital support

Krain AI has already been favored by top global capital favors.

Andreessen Horowitz (A16z): Andreessen Horowitz, or A16Z, is a leading venture capital firm focused on expansion stage companies in the US and Asia. A16Z focuses on future technology and value investing, and wants to assist Internet and high-tech entrepreneurs to fulfill their entrepreneurial dreams, and work together to create respectable and great companies.A16Z focuses on the areas of Technology, Chip, AI Intelligence, Intelligent Manufacturing, Internet+, Smart Hardware, Cloud Computing, Big Data, Mobile Technology, Consumer Internet, SaaS, Biotechnology, as well as Blockchain and Crypto.

Greylock Partners: Founded in 1965, greylock Partners (Greylock) is one of Silicon Valley's most recognized venture capital firms with $2 billion under management. Headquartered in Silicon Valley, the firm has offices in Cambridge, Beijing and Bangalore. The firm has invested in Facebook, LinkedIn, Instagram, Pandora, Dropbox, Airbnb and a host of other notable companies in its early years.

Sequoia Capital: Founded in 1972, Sequoia Capital has 18 funds with total capital under management of over 4 billion dollars. Sequoia Capital has invested in more than 500 companies, more than 200 of which have successfully gone public and more than 100 of which have successfully exited through mergers and acquisitions. Sequoia Capital, as the world's largest VC (venture capital investor), has invested in a number of famous technology companies such as Apple Computer, Cisco, Oracle, Yahoo and Google, Paypal, etc., which once created the Sequoia phenomenon in which a number of famous enterprises in the U.S. have been built around Sequoia Capital for more than 30 years. At present, the total market value of the companies invested by Sequoia Capital exceeds 10% of the total value of the NASDAQ market.

Kleiner Perkins: KPCB (Kleiner Perkins Caufield & Byers) was founded in 1972, is the largest venture capital fund in the United States, mainly to undertake the investment business of the school property of major universities. It has invested in America Online, Endeavor (EXICITE), Amazon.com, Netscape, and U.S. sports along the line.

Intel Capital: Intel Capital, Intel's strategic investment program, is an important part of Intel's efforts to promote the development of computing and communications platforms, focusing on Intel's strategic development direction and making small-capital investments in companies with innovative technologies to promote the development of the Internet economy. The company invests in a wide range of hardware and software development, as well as services for the enterprise, home, mobile computing, healthcare, and semiconductor manufacturing. Since 1991, Intel Capital has invested more than $4 billion in more than 1,000 companies in more than 30 countries around the world.

Bessemer Venture Partners: is a private venture capital firm engaged in long-term venture capital activities. Companies that Bessemer has helped build include W.R. Grace, International Paper, Ingersoll-Rand, Blue Nile, Skype and others. By 2011, PCH had offices in Boston, Silicon Valley, New York, Mumbai, and Herzliya, and managed more than $2 billion in capital invested in more than 130 companies around the world.

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Chapter III

Krain AI Token

Economic Model Design

3.1 Krain AI tokens

Krain AI passes are the original fuel that drives the entire intelligent agent network and the bridge for the free flow of value within the ecosystem. As a digital credential on the trusted settlement layer of the blockchain, it not only maps the real value of algorithmic power and data contribution, but also accurately distributes the revenue to developers, nodes and users through smart contracts. Whenever users call personalized prediction, reasoning or multi-intelligence body collaboration services, they need to consume the corresponding amount of $KRAIN according to the computational complexity; with the improvement of model accuracy and the expansion of application scenarios, the demand for tokens will grow exponentially, which will continue to consolidate its core position in the decentralized AI economy, and create a lasting and universal technological dividend for the society.

Token name: Krain AI

Token abbreviation: $KRAIN

Number of pieces issued: 100 million

Issue price: 0.005

Overall, $KRAIN passes are tightly coupled with the Krain AI network in the four dimensions of value bearing, incentive distribution, governance empowerment and security escort, fully demonstrating their irreplaceable ecological core attributes:

- Value level: $KRAIN not only carries credible settlement on the chain, but also unites the consensus of the whole network, becoming the value scale of intelligent service flow;
- Incentive level: $KRAIN drives a continuous supply of network power and content as a financial reward for execution nodes, data contributors and developers;
- Governance: Holding coins means having the right to propose and vote, and $KRAIN allows the community to jointly decide on protocol upgrades and the use of funds;
- Security: The pledge and penalty mechanism is guaranteed by $KRAIN, which incentivizes honest behavior and punishes evil nodes, and thus strengthens the security of the whole network.

3.2 Value attributes of $KRAIN

Krain AI builds a healthy ecological model of "return on income and value-added contribution" through the continuous circulation of $KRAIN within the platform and across chains. Most of the economic revenue generated by the network will be automatically returned to investors and community contributors, incentivizing them to continue to invest in development, promotion and governance, thus forming a positive flywheel. In order to ensure the longevity of this model, $KRAIN's values are deeply embedded in the design of the protocol:

Independent Survival: $KRAIN relies on a clear commercial closed loop (agent call fees, data license fees, node pledge income, etc.) to achieve self-blood-supporting, laying a solid foundation for the circulation of wildcards;

Autonomy and Consensus: The main network and sub-ecologies gradually improve the common decision-making mechanism, and eventually operate under the DAO governance framework, where all important decisions are based on the votes of $KRAIN holders;

Sharing: A significant percentage of the ecological value-added will be returned as public wealth to be used for security funds, developer subsidies, community activities and global promotion to improve the overall competitiveness of the network;

Continuous Evolution: The agreement establishes a dedicated reward pool that awards $KRAIN incentives to members who propose innovative mechanisms or performance improvements, encouraging the network to continue to iterate both technically and economically.

Based on these values, $KRAIN exhibits the following core attributes:

1) Property Rights Attributes

Under the scenario of clear circulation on the chain, $KRAIN holders have full disposal rights of the passes they hold, and can freely transfer, pledge or destroy them within the scope of the law and the agreement, and the passes themselves constitute the evidence of digital "asset ownership".

2) Monetary properties

As the native payment medium of Krain AI ecosystem, $KRAIN is used in multiple scenarios such as settlement agent calls, data authorization, cross-chain bridge fees, etc. Each payment is recorded in the shared ledger on the chain, making $KRAIN a trusted bridge for value exchange. Each payment is recorded in the shared ledger on the chain, and the transaction process is open and auditable, making $KRAIN a credible bridge for value exchange.

3) Equity attributes

$KRAIN maps the network's future cash flow and growth potential. Upon reaching a certain threshold, you will receive a proportional share of agent fees or treasury investment income. It is important to emphasize that passes only represent rights of use and governance, and are not equity or securities investments in the traditional sense.

4) Governance attributes

Within the Krain DAO governance system, $KRAIN is the only credential for proposals, votes and parameter changes. Any decision must be voted on within a fixed window before it can be implemented; low holders can join their voices to counterbalance high holders, ensuring a balanced distribution of power.

5) Security Attributes

The node pledge and punishment mechanism uses $KRAIN as collateral: if the verifier has malicious or negligent behaviors such as double-signing, offline, etc., its pledge will be partially or fully deducted and redistributed by the system to honest nodes and whistleblowers, so that the economic incentives and penalties coexist to significantly enhance the resilience of cybersecurity.

Through the four-dimensional design of "Value-Incentive-Governance-Security", $KRAIN is not only the circulation medium of Krain AI ecosystem, but also the core link of value community that connects developers, arithmetic suppliers, data contributors and end-users. It is also a value community linking developers, computing power suppliers, data contributors and end users, which drives the entire decentralized intelligent agent network into a virtuous cycle of sustainable self-evolution.

3.3 Market Incentive System

In the early stage, we will give away $KRAIN tokens through airdrops/rewards, etc., to attract fans to pay more attention to the ecology. In the community, users holding $KRAIN tokens are able to enjoy a series of rights and benefits such as token appreciation, fee deduction, asset appreciation, income rebate, supervision, voting and election, and holding coins to generate interest, etc. We also reward users who contribute to the system liquidity through various incentives. We also reward users who contribute to the liquidity of the system with $KRAIN tokens through various incentives. The community through the incentive mechanism back to the community users, through the holding of $ KRAIN tokens, so as to enjoy the rights and interests of the community.

At the beginning of $KRAIN tokens on the exchange, through kol, media news, community leaders and other channels to publicize the registration of free coins activities, recruitment of partners activities, trading fee reduction activities, and actively build the community community operation and construction. Through the community management of leaders, all-round community promotion activities, lucky draw activities, Q&A gift activities, etc., so that the global $KRAIN token evangelists and newcomers to see our determination to forge ahead.

3.4 $KRAIN Token Circulation Scenario

In order to maximize the utility of $KRAIN on and off the chain, Krain AI has designed a multi-dimensional, multi-level circulation structure for the pass, covering four major segments: "platform operation - AI application - end-user - cross-chain ecology". Krain AI has designed a multi-dimensional and multi-level circulation structure for the passes, covering "platform operation - AI application - end users - cross-chain ecology" and striving to form a positive flywheel in every value exchange.

1) Krain AI Eco Circulation

At the core protocol layer, $KRAIN is first used to create and maintain "Cycles" - the fuel that drives intelligent agent execution. Any software or agent running on the Krain AI mainnet must continuously consume Cycles in order to stay online; Cycles are generated by $KRAIN in a one-time exchange and destroyed after use, forming a "buy-consume-burn" deflationary closed loop. Cycles are generated by a one-time exchange of $KRAIN and destroyed after use, forming a "buy-consume-burn" deflationary closed loop. As the number of proxies and frequency of calls increase, the overall consumption of Cycles will rise dramatically, thus continuously compressing the supply of secondary market liquidity. In addition, if developers want to reserve performance redundancy for their agents, they can pre-charge $KRAIN in exchange for Cycles as a "Gas Vault", which can be automatically expanded during peak hours to ensure service stability.

2) Artificial Intelligence Application Circulation

In the process of AI R&D and service delivery, $KRAIN will run through the following three core scenarios:

- Developer Testing: The model training and backtesting phases require a lot of computing power. Developers pay $KRAIN for on-demand GPU/TPU clusters, which can reduce training time by 50 - 90% from the default, saving the time-to-market window.
- Paid DAI Apps: If developers package the agent as a paid DApp, end-users pay per call using $KRAIN, e.g. cryptocurrency prediction bots, smart data cleansing tools, etc.
- AI Training Outsourcing: Third-party organizations that need to fine-tune models or obtain specific data annotations in the Krain AI environment are also required to settle training and service costs in $KRAIN.

3) User scenario circulation

Quantitative trading: Quantitative teams can call large-scale predictive models in real-time by accessing on-chain arithmetic pools and dedicated financial data agents; all fees are settled in $KRAIN, eliminating the need for self-built server rooms and maintenance expenses.

- AI Learner Program: Colleges and online education platforms can purchase $KRAIN tokens in bulk to provide students with low-cost arithmetic quotas for use in course experiments, after-school assignments, and research projects, lowering the threshold for AI education.

• Entity Industry Expansion: In IoT scenarios such as smart manufacturing, smart energy, vehicle networking, drone scheduling, etc., $KRAIN serves as the only value pass through device authentication, algorithm upgrades, data subscription, and remote operation and maintenance charges, ensuring cost transparency and instant settlement for device and cloud collaboration.

4) Cross-chain eco-circulation

Krain AI has bridged mainstream networks such as Ether, Arbitrum, and BSC via LayerZero to enable multi-chain asset swaps:

• Exchange Interoperability: $KRAIN can be loaded, pledged, lent, borrowed and aggregated in seconds directly on centralized or decentralized exchanges.

• DeFi Portfolio: Holders can pool $KRAIN with ETH, USDC, etc. to earn transaction fees and additional incentives, or collateralize liquidity in cross-chain lending agreements.

• Cross-chain smart contracts: Institutional developers can use $KRAIN as a gas payment asset to provide multi-chain DApps with the ability to predict, optimize, and automate execution, while avoiding the cross-chain risks associated with "logic bombs".

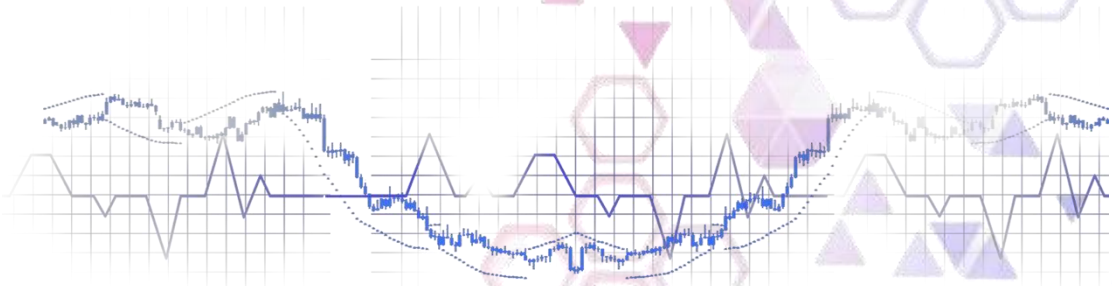
In the future landing model, $KRAIN will also continue to circulate in the chain notarization, node incentives, DAO parliamentary campaigns and other scenarios:

• Network transaction nodes and notary nodes obtain $KRAIN rewards through the "mining" mode, and work together to maintain the security of the entire network;

• $KRAIN serves as an early equity metric asset to provide incentives for consensus landing of diverse cross-chain applications;

• Advanced smart contract execution requires pledging a certain amount of $KRAIN for anti-fraud protection to prevent malicious logic from disrupting network performance.

Through this multi-level circulation framework, Krain AI enables $KRAIN to travel freely in multiple industries and scenarios, such as academia, industry, finance, and consumption, which not only ensures the liquidity and value capture of the pass, but also lays a solid payment and incentive cornerstone for the global decentralized smart body economy.



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Krain AI

Chapter IV

Krain AI

Platform Architecture

4.1 Overview of the overall system architecture

Krain AI platform adopts a layered architecture system, covering five core modules: user interaction layer, AI agent execution layer, recommendation and discovery layer, hosted computing layer and blockchain foundation layer. This architecture is designed to be open, scalable and decentralized, supporting multi-role and multi-task concurrent operation, with a high degree of elasticity and autonomy.

The user interaction layer is located at the top layer of the system, providing an intuitive interface for developers and end users. Both model deployers, service invokers and governance participants can directly access the core functions via web or mobile. This layer is seamlessly connected to the user wallet and supports one-click login, resource invocation and agent management, significantly reducing the participation threshold.

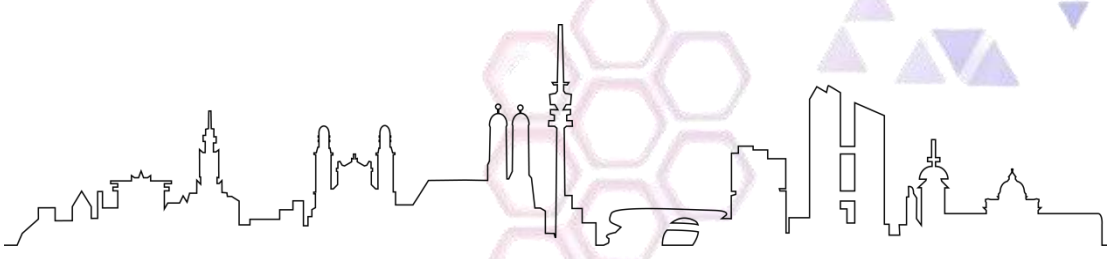
The AI agent layer is the intelligent hub of the platform. Each agent can be understood as a lightweight AI entity with specific task capabilities, with the basic capabilities of self-training, self-deployment and self-feedback. Through model inheritance and module reuse mechanism, users don't need to build from scratch, but can quickly combine existing algorithmic components to build their own intelligent body.

The recommendation and discovery layer is responsible for the flow and distribution of agents within the platform. Relying on the platform's internal logs, user interaction tracks and model performance data, Krain AI introduces interpretable recommendation algorithms to ensure that different users can be quickly matched with the optimal agent in different scenarios, thus improving utilization efficiency.

The hosting computing layer is based on a distributed arithmetic pool, providing a stable operating environment for agents. The platform supports on-demand invocation of edge nodes and high-performance GPU clusters, and intelligently schedules resources through load balancing policies to ensure stability and real-time performance.

The bottom layer of the blockchain takes Base chain as the infrastructure, supporting operations such as agent authentication, payment interaction, model verification and governance proposal. This layer not only ensures the transparency and auditability of the whole system, but also provides a solid trust foundation for open ecological construction.

Krain AI builds a highly flexible, low-coupled, and strongly autonomous intelligent infrastructure, laying a solid foundation for the scaled deployment and commercialization of global AI services.



4.2 AI Agent Creation Execution Process

The lifecycle of an AI agent on the Krain platform is typically divided into five phases covering creation, training, registration, deployment and maintenance, each of which is tightly integrated with the on-chain system to ensure traceability, composability and profitability.

The first stage is requirement definition. Users choose agent targets according to their own business logic, such as data analysis, image recognition, intelligent Q&A and so on. The platform provides a number of standard templates to help users quickly set the input and output specifications and functional boundaries for subsequent deployment and reuse.

In the model training phase, users can choose their own dataset or call the platform's open data resources to train and fine-tune the specified model. The platform has built-in interfaces to mainstream frameworks such as Huggingface and OpenMMLab, allowing developers to iterate efficiently in a familiar environment and introducing automated tuning tools to accelerate performance optimization.

The third stage is agent registration and on-chain deposit. After the training of each model is completed, the system automatically generates agent fingerprints (model hash), training log summaries and version numbers, and generates a unique agent number through smart contracts on the chain. This process guarantees the ownership and compliance of the model results, and also provides a basis for future benefit distribution and traceability auditing.

At the deployment stage, users can upload agents to the platform's arithmetic pool with a single click. The system dynamically allocates computing resources according to agent load and usage frequency to ensure response latency and availability. At the same time, it supports cross-project agent reuse mechanism to enhance the marginal value of training results.

Finally, it enters the stage of continuous optimization and monitoring. The platform collects user feedback, operation indexes and environment logs in real time, combines them with online learning algorithms to make adjustment suggestions for agent performance, and users can choose whether to upgrade the agent version manually or automatically.

4.3 Application Discovery Recommender System

In the intelligent ecosystem where massive agent models and personalized needs are intertwined, efficient discovery and accurate matching become a key part of the platform's operation, and the recommendation system launched by Krain AI integrates semantic understanding, user behavior modeling, and real-time performance feedback mechanisms to provide users with a dynamic, personalized, and transparent intelligent agent discovery path.

The system first builds a multidimensional portrait of all online agents in the platform. The image not only contains basic information (function description, invocation frequency, training model), but also introduces a scoring mechanism, which takes into account dynamic data such as service accuracy, execution latency, user satisfaction, version stability, etc., and builds a performance spectrum that evolves over time.

Behavioral modeling on the user side is equally important. The platform aggregates users' search keywords, click preferences, usage frequency and feedback ratings, identifies users' intentions through collaborative filtering and semantic association algorithms, and then builds a preference labeling system. For example, if a user often calls a predictive agent, the system will automatically favor pushing models with time series processing capability.

In terms of recommendation algorithms, Krain AI does not use a completely black-box deep learning model, but introduces an interpretable reinforcement mechanism. Recommendation results are accompanied by reasons for recommendation, such as "high similarity to the model you have recently used", "top 5% of calls in the same field", etc., to enhance user trust and selection efficiency.

In addition, the platform also has built-in mechanisms such as "Hot List Recommendation", "Industry Label Navigation", "One Click Trial", etc., which combines the time window and community dynamics, continuously outputs highly active agents, and improves the initial experience of new users. The platform also has built-in mechanisms such as "Hot List Recommendation", "Industry Tag Navigation" and "Key Trial".

This recommendation system, which balances technical accuracy and user interpretability, not only guarantees the efficient flow of platform agents, but also significantly improves user satisfaction and platform activity.

4.4 Application deployment hosting mechanism

In order to maximize the user experience and the continuity of agent operation, Krain AI deeply integrates a set of automated and intelligent deployment and hosting mechanisms in the platform architecture. This mechanism not only meets the diverse needs from small-scale experimental models to large-scale production applications, but also standardizes the processes of arithmetic scheduling, operation monitoring, and abnormality repair, reducing the technical threshold and operation and maintenance costs for users.

After completing model training and registering for uploading, users just need to click the "Deploy" button to upload the agent to the platform's hosting environment in one click, and Krain AI will automatically assign the agent to the most suitable running nodes according to the agent's computing characteristics, the number of user accesses, memory consumption and other parameters. These nodes constitute the platform's elastic computing power pool, deployed in multiple geographic locations, with load balancing and high availability mechanisms.

The platform hosting environment supports both hot-start and cold-start operation modes. For models with high-frequency calls, the system keeps them resident in memory to ensure real-time responsiveness; for long-tail models with occasional use, on-demand startup logic is adopted to optimize the overall resource usage efficiency without affecting the user experience.

In addition, the system provides multi-dimensional monitoring panels, including model call latency, GPU/CPU occupancy, abnormal interruption rate, etc., so that users can check the operation of the agent in real time. If abnormal performance occurs, the system will automatically trigger the "self-healing mechanism" to ensure that the business is not interrupted through dynamic migration, automatic restart and other means.

At the data level, the platform performs the hosting process in strict accordance with privacy computing norms. User data is not shared with other agents, and all training and invocation behaviors are data hash deposited through Base chain smart contracts to ensure that operations are traceable and tamper-proof.

4.5 Wallet Integration and Base Chain Interaction

As a truly decentralized intelligent infrastructure platform, Krain AI highly relies on the trusted computing and authentication capabilities of the blockchain. In this context, the platform is deeply integrated with Base chain and is highly compatible with the mainstream wallet ecosystem, so that all interactions can be uploaded, tracked and governed.

The first time a user accesses the platform, he or she can connect directly via wallets such as WalletConnect, MetaMask or Coinbase Wallet. Upon successful connection, the platform automatically assigns a unique identity credential to the user, which is used to record all subsequent on-chain interactions, including model calls, token payments, and proposal voting.

All transactions on the platform rely on Base chain. Because Base chain has extremely low Gas fee, second confirmation and high concurrency processing capability, Krain AI can realize on-chain asset operation with almost "Web2 level" fluency. When users call the AI agent, they only need to sign and authorize to complete the $KRAIN token payment, and the system automatically deducts the corresponding token according to the frequency of the agent call.

In addition, the creation, registration, modification and deployment of each model are synchronized and written on the chain through smart contracts. Key metadata, including model version hash, deployer address, number of invocations, cumulative revenue and other key metadata, are all saved in the on-chain contract structure, realizing data transparency and clear ownership.

Krain AI's DAO governance mechanism is also built based on the wallet and Base chain. All $KRAIN holders can initiate a proposal or vote, and the results of the on-chain governance will automatically affect the key parameters of the platform, such as the agent profit sharing ratio, the weight of the recommendation algorithm, and the system upgrade program. Each governance vote has a clear starting and ending time and voting threshold to ensure the democracy and execution of the governance mechanism.

4.6 Overview of Modular Interface Design

Krain AI's platform architecture emphasizes module decoupling and interface standardization at the technical level, and is committed to building an open platform ecosystem that is suitable for developers' high degree of customization and can also support enterprise-level deployment. Its modularized interface system runs through the whole process of the platform from agent registration, deployment and invocation to revenue distribution, which greatly improves the efficiency of technology integration and external ecological docking.

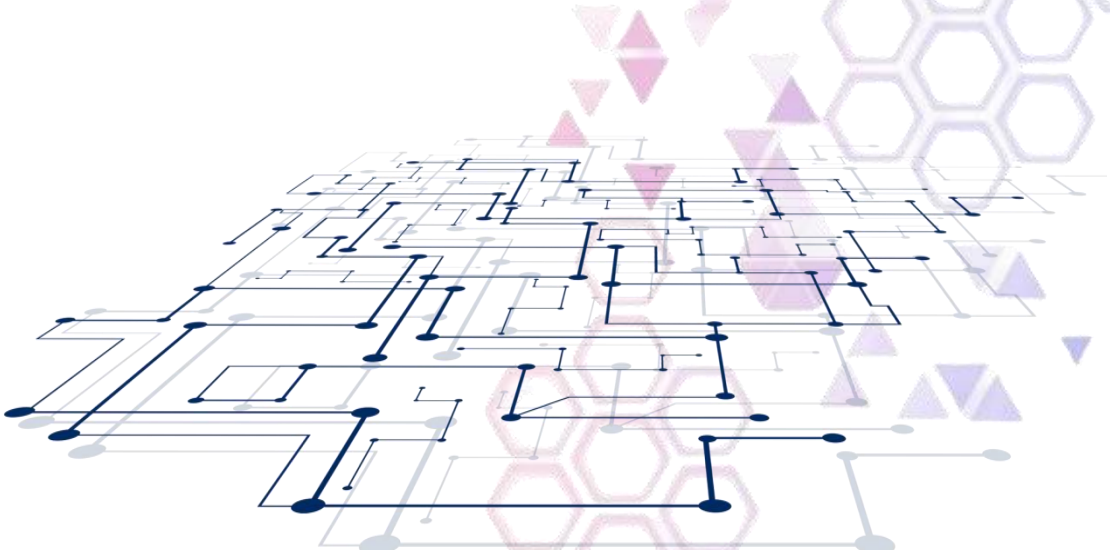
All key functions of the platform are open in the form of RESTful APIs, including model registration interfaces, training parameter configuration, hosting node selection, payment call paths, etc. Together with the detailed documentation and testing environment, developers can easily integrate agent services into their own systems.

For specific industry needs, the platform has also developed a "plug-in framework mechanism" to support users to add custom functions through modular plug-ins. For example, e-commerce scenarios can load the recommendation algorithm module, financial users can deploy the risk assessment toolkit, and educational users can hook up the test scoring engine. All plug-ins are containerized to ensure that the main structure of the platform is safe and stable.

In order to realize inter-platform synergy, Krain AI also supports GraphQL, gRPC and other interface standards to achieve efficient data and function sharing with external AI tool chains, data platforms, financial services and so on. Developers can realize the call embedding of Krain agent through SDK, such as accessing on-chain data analysis platforms, generative text service interfaces or private domain data middleware.

In addition, the platform has strengthened the authority management and contract invocation bridge design in the interface design. Each interface has a strict hierarchical control of permissions, and all critical operations (such as deployment, destruction, and parameter adjustment) must be verified by the wallet and written to the state variables of the Base chain. This design prevents permission abuse and enhances system resilience.

The extensive opening of modular interfaces not only accelerates the self-evolutionary capability of the platform ecosystem, but also provides strong support for external developers and cooperative organizations to participate in the construction of richer AI+ blockchain scenarios.



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Krain AI

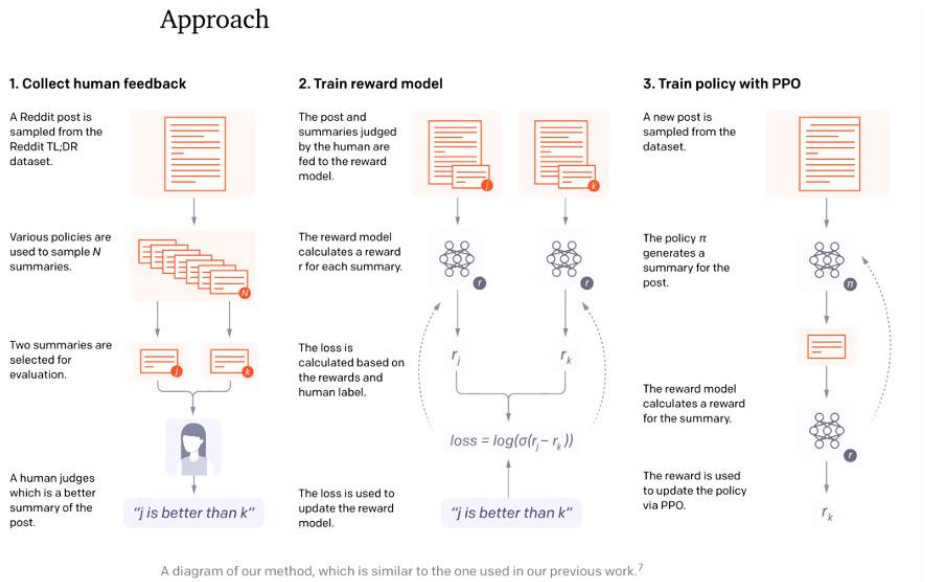
Chapter V

Key Technologies

5.1 Human feedback reinforces learning

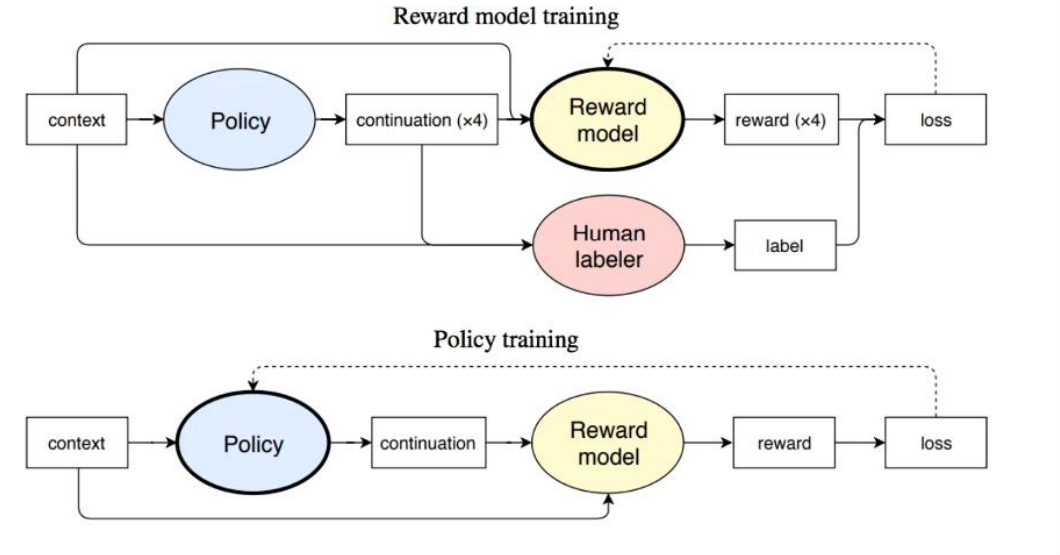
Krain AI widely adopts Reinforcement Learning from Human Feedback (RLHF) in the process of intelligent agent optimization to improve the practicality and interpretability of AI models. Traditional AI training relies on labeled data, while RLHF solves the problem of insufficient data and poor model generalization ability by introducing human subjective judgment.

Krain AI's RLHF process is divided into three steps: firstly, the system collects preference data through the user's sorting feedback on the results of multiple agents' behaviors; secondly, these preference feedbacks are fed into the reward modeler to form a reward function that can fit human preferences; and finally, the policy model is trained by the PPO (Proximal Policy Optimization) algorithm to guide the intelligent agents to evolve towards behaviors that better fit the user's expectations.

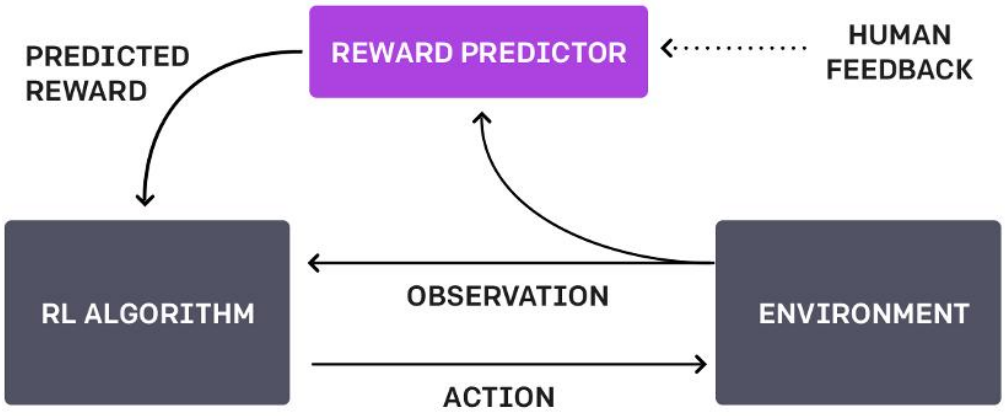


A diagram of our method, which is similar to the one used in our previous work.[7]

The first stage of RLHF is to manually sort for multiple candidate summaries; the second stage is to train the sorting model; and the third stage is to learn Policy using the PPO algorithm.



And the core idea of RLHF is to use human feedback to judge the segment that is closest to the video's behavioral goal; train to find the reward function that best explains the human's judgment, and then use RL to learn how to achieve that goal.



Krain AI is an excellent work that stands on the shoulders of mature applications and the above theories, and it combines LLM (large language model)/PTM (pretrain language model) with RL (reinforcement learning) in an excellent way to prove that this direction is feasible.

The PPO algorithm combines stability and efficiency and is the current mainstream framework for reinforcement learning. Compared with the drawbacks of traditional policy gradient methods, which are sensitive to step size and difficult to converge, PPO introduces an update limiting function, which makes the policy gradually approach the optimum during the training process instead of violently oscillating. Thanks to this, Krain AI is able to continuously fine-tune agent behaviors and adapt to more complex scenarios without sacrificing model stability, and the introduction of RLHF enables the platform AI agents to have a "human-centric" decision-making bias, improves the quality of interactions, and provides Krain AI ecosystem with an intelligent kernel that continues to evolve.

5.2 Zero-knowledge proofs

Zero-knowledge proofs were proposed by S. Goldwasser, S. Micali, and C. Rackoff in the early 1980s [10], and refer to the idea that a prover can convince a verifier that an assertion is correct without revealing any useful information. Zero-knowledge proof systems are an effective means of realizing privacy-preserving security protocols, and first we give the definition of an interactive proof system:

Interactive Proof Systems: a pair of interacting machines <P,V> (where P and V are the provers and verifiers, respectively) is said to be an interactive proof system for a language L when it satisfies:

- The machine V is polynomial time;
- Completeness: $\forall x \in L$. Then there exists an honest prover P such that V interacts with P and outputs "$x \in L$";
- Soundness: $\forall\ x \notin L$, then for any prover P, the probability that V interacts with P and outputs "$x \in L$" is small.

A zero-knowledge proof system can be thought of as an interactive proof system that meets the zero-knowledge requirement and must satisfy the following four properties:

- The authenticator cannot obtain any information from the protocol;
- The certifier cannot deceive the verifier;
- The verifier cannot deceive the prover;
- A verifier cannot simultaneously masquerade as a prover in other zero-knowledge proof systems.

Zero-knowledge proofs are extremely well suited for privacy-preserving business scenarios, and Zerocash is a typical example of its application. zerocash is the first blockchain system to use a zero-knowledge proof mechanism, which provides full payment confidentiality on top of bitcoin by automatically hiding the sender, receiver, and amount of all transactions on the blockchain, and allowing optional disclosure of the viewer's secret key to others to achieve Access authorization to view transaction details.

Krain AI provides a zero-knowledge proof security service layer at the bottom of smart contracts and decentralized applications by highly abstracting the zero-knowledge proof protocol to support the privacy protection needs of Krain AI data computation, such as zero-knowledge authentication and chat data confidentiality.

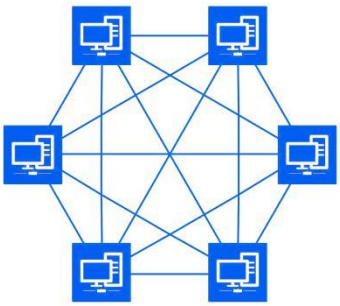
5.3 Homomorphic encryption

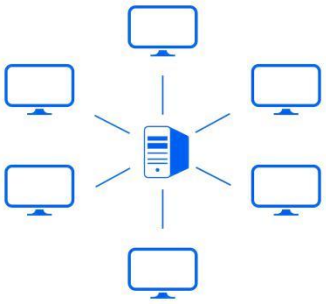
With data security increasingly becoming a core capability of AI system infrastructure, Krain AI systematically embeds homomorphic encryption as a key privacy computing module of the platform into the data processing and model execution process. The so-called homomorphic encryption is an encryption method that allows arithmetic or logical operations to be performed directly in the ciphertext state, and its core advantage lies in the fact that without decrypting the original data, the data can be processed, statistically, inductively, and predictively, and the final output can be used as a usable result. This feature completely breaks through the bottleneck of traditional encryption, which is "use or not protect, protect or difficult to use", and is especially suitable for industries with extremely high requirements for data privacy, such as medical diagnosis, financial risk control, identity identification and government sensitive data analysis.

Krain AI platform currently supports a variety of classical homomorphic encryption algorithms, including Paillier (additive homomorphism), ElGamal (multiplicative homomorphism), RSA partial homomorphic scheme, etc., and continues to follow up on the actualization of more advanced approximate full homomorphic algorithms, such as CKKS, BFV, and so on. With respect to performance bottlenecks, the platform introduces a specialized cryptographic operator scheduling engine based on its self-developed modular OVM (On-chain Virtual Machine) architecture, and cooperates with hardware instruction optimization paths, such as Intel SGX acceleration and parallel compilation of GPUs, to effectively improve the efficiency of ciphertext computation.

In addition, Krain AI has also launched the "Secret Smart Contract" development framework, which allows developers to write operation logic in the form of DSL (Domain-Specific Language) and deploy it in the encrypted computing sandbox on the chain for execution. The contract runs without explicit interaction, which greatly improves the platform's adaptability to commercial scenarios. For example, in medical scenarios, third-party algorithm service providers can complete the deployment and operation of AI diagnostic models without accessing the original patient data, realizing the in-depth combination of privacy protection and intelligent services.

The homomorphic encryption module has become the centerpiece of the Krain AI privacy protection system, injecting strong privacy compliance capabilities into the "AI-as-a-Service" model and laying a solid foundation for building a trusted AI ecosystem.





5.4 Safe multiparty calculations

Krain AI extensively integrates Secure Multi-party Computation (SMC) technology into its platform design, and is committed to solving the problem of data collaboration between multiple organizations and nodes, especially in the context of the co-existence of "data silos" and "privacy compliance". Especially in the context of "data silos" and "privacy compliance", SMC provides an important solution path for distributed AI training, joint modeling and decentralized data value release.

The core logic of SMC is that multiple participants can still work together on a computational task without trusting each other, but without exposing their raw data to each other. This mechanism is especially important for industries with data barriers such as healthcare organizations, financial groups, and research institutions. For example, two hospitals can jointly train a disease prediction model without sharing patient cases; several insurance companies can jointly evaluate a risk model without revealing their policy data.

The Krain AI platform supports multiple SMC protocol forms, including:

- Additive secret sharing protocols (e.g., Shamir's Secret Sharing);
- Yao's Cryptographic Boolean Circuit Protocol;
- Boolean circuit transformation protocol;
- Hybrid forms of data cross-validation protocols, etc.

The platform encapsulates a unified API interface for each protocol, and developers only need to define the computational goals and data rights of each party to automatically call the matching protocol combination. At the same time, the Krain AI platform introduces a federal identity verification mechanism and a common collaboration process engine, which can guarantee the legitimacy of identity and transparency of execution paths in cross-domain collaboration.

The SMC module has already been implemented in a number of real-world scenarios, such as cross-region health insurance fraud identification, joint blacklist screening of financial institutions, and joint analysis of scientific research results between universities. Through the systematic deployment of Secure Multi-Party Computing, Krain AI not only improves the platform's collaboration efficiency and privacy compliance, but also transforms data from a "protected asset" to a "securely usable factor of production".

5.5 Policy-driven authority control system

The permission control system of AI platform is not only related to the security of the platform, but also has a direct impact on the usage experience and commercial flexibility. when designing the permission system, Krain AI abandons the traditional single-level model centered on roles, and adopts the mechanism of "policy-driven + chained execution", which refines the management of permissions into a dynamic matrix of four elements: behavior, resource, context and role. Instead, it adopts a "policy-driven + chained execution" mechanism, which refines permission management into a four-in-one dynamic matrix of "behavior, resources, context, and roles" to ensure that the configuration of permissions can be flexibly adapted to complex applications, and also has strong consistency and verifiability.

The platform supports a combined mechanism based on RBAC (Role Based Access Control) and ABAC (Attribute Based Access Control). Developers can set up the precise settings through the graphical policy orchestration tool:

- Whether a user group has access to a certain type of AI agent;
- Whether users in a region can upload training data;
- Whether a smart contract can call on-chain model parameters, etc.
- All policy definitions are hosted by smart contracts and enforced by on-chain validation, preventing common security risks such as "phantom privileges" and "privilege drift".

In addition, Krain AI introduces Decentralized Identity (DID), which generates a unique identity for each user, agent, and organizational node and binds it to the permission system. At the same time, it supports dynamic privilege update and multi-signature mechanism, which provides "multi-person common control" security in project collaboration, organizational governance, data access and other highly sensitive operations.

Currently, Krain AI's permission system has been adapted to a variety of high-complexity AI projects, such as joint model training, multi-party data collection, multi-node voting governance and other scenarios, and it has become one of the infrastructures for the platform to realize trusted collaboration. It not only improves the system's deep defense capability, but also equips the platform with strong business elasticity and adaptability.

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Krain AI

Chapter VI

Platform

Governance Structure

6.1 Establishment of the Krain AI Foundation

The Krain AI platform is led by the Krain AI Foundation, which is registered in Singapore and aims to guarantee the decentralized governance, fair distribution and sustainable development of the platform. As a non-profit organization, the Foundation operates independently in accordance with the law, and its main responsibilities include overseeing the implementation of the platform's strategy, maintaining protocol compliance, coordinating the community consensus mechanism, and promoting the platform's ecological construction and international development.

Since its inception, the Foundation has established a comprehensive governance charter and a transparent financial system to ensure that all platform assets, technology and community resources are clearly attributed to the Krain AI Foundation, which is committed to not seeking commercial profits, and its revenue is mainly used for eco-incentives, technology research and development, platform security, compliance audits, and global promotion. In addition to its basic functions, the Foundation also has an arbitration committee to resolve disputes and contract enforcement objections in the operation of the platform and protect the legitimate rights and interests of eco-members.

The establishment of the Foundation provides the Krain AI platform with a credible foundation of governance assurance, while also providing the platform with greater compliance resilience in a global environment of evolving regulatory policies.

6.2 Krain AI Foundation Governance Principles

The Krain AI governance system follows four core principles: decentralization, transparency, consensus-driven and accountability:

Decentralization: All major governance decisions need to be completed through the vote of the coin holders, the Foundation does not have a single decision-making power, but exists as an executive and coordinator, guaranteeing the openness and democracy of governance.

Transparency: The platform makes key information such as governance processes, financial budgets, development progress, contract execution and other key information public in real time, subject to community and auditor oversight. Governance proposals are required to be accompanied by detailed background materials and executable paths, and complete discussion and voting processes are recorded.

Consensus-driven: Krain AI introduces an on-chain proposal and multi-round voting mechanism to ensure that the platform direction and rule adjustments come from the consensus of the majority of coin holders. For sensitive issues such as major contract upgrades, economic model changes or cross-chain migrations, a higher threshold voting weight and implementation delay mechanism will be set.

Accountability: All governance behaviors are traceable. Whether it is the execution of affairs by the foundation, node operation, code upgrading, or DAO community voting results, they are all recorded and tracked on the chain, and supported by a responsibility determination mechanism. If governance errors or omissions cause losses, the responsible party must accept community comments and constraints.

This system of governance principles can take into account the spirit of Web3 openness while ensuring the orderly operation and legal compliance of the platform, promoting the steady evolution of Krain AI to the global infrastructure layer.

6.3 Krain AI Foundation Organizational Structure

There are six core functions within the Krain AI Foundation, which are:

Council: The highest decision-making body of the Foundation, consisting of the initial sponsors, technical representatives, compliance advisors, and community representatives, responsible for setting strategic direction and approving budgets.

Executive Office: Responsible for the day-to-day operation of the Foundation, program coordination and cross-sectoral collaboration management, headed by the Executive Secretary.

Tech Review Board: Responsible for the technical review and iteration management of the platform's core protocols, security components, smart contracts, etc., to ensure development quality and system security.

Finance & Legal: Responsible for the Foundation's financial transparency, compliance reporting, tax planning and liaison with external legal counsel.

Community & Ecosystem: Focuses on global community governance, collaborative ecosystem introduction, user growth, content governance and DAO support.

Risk & Audit Committee: Independent of the Board of Directors, the Risk & Audit Committee conducts regular risk assessments, financial audits and internal control checks on the platform.

The Foundation's departments have clear authority, mutual checks and balances, and cooperate with the efficiency of governance execution through on-chain tools, balancing open collaboration with governance intensity.

6.4 Human Resources and Team Mechanisms

The Krain AI Foundation's team building is guided by the three main principles of "professionalism, global synergy, and responsibility contract":

Professional Priority: The Foundation's personnel come from a variety of fields, including artificial intelligence, blockchain security, economics, law and open source communities, and have rich experience in project implementation and governance and operation. Each member is required to sign a professional ethics and confidentiality contract, and receive regular professional training and assessment.

Global Collaboration: The Foundation's team is located in Singapore, Hong Kong, Germany and the United States, supporting remote collaboration and multi-time zone office mechanisms. The official language is English, compatible with Chinese and many other languages, to ensure seamless global ecological communication.

Responsibility Contract: The platform sets up an open and transparent incentive system, whereby team members receive Token incentives through smart contracts, which are linked to their work results. If the project milestones are not completed, the contract will be automatically triggered to freeze or reduce, forming a performance-oriented incentive system.

In addition, Krain AI also actively introduces an advisory mechanism, inviting AI researchers, open source protocol architects and former members of regulatory agencies to serve as the Foundation's advisory board, and regularly participate in the study and judgment of important matters.

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Chapter VII

Project Implementation

7.1 Strategic cooperation

Krain AI has established in-depth strategic partnerships with a number of leading Web3 infrastructure and service providers around the world in a number of key areas, including technology landing, on-chain deployment, user access, and asset payments. Below is a brief description of the five currently confirmed core partners:

- Decubate

Decubate is a decentralized acceleration platform focused on Web3 startup incubation and token economy design, aiming to empower emerging projects to complete the full cycle of support from proof of concept to community launch. Its platform gathers a large number of professional investors, advisor resources and Token Launch support tools, and is one of the fastest-growing startup acceleration networks in the current DeFi and AI tracks.

The cooperation between Krain AI and Decubate focuses on early marketing, community building, incentive mechanism design, and product launch tempo management, leveraging its rich operational experience and channel resources to accelerate Krain AI's recognition and activity in the global Web3 community.

- BASE

Base is an ethereum Layer 2 extension network launched by Coinbase, which is dedicated to providing developers with a low-cost, high-throughput, safe and reliable blockchain application deployment environment.Base has the ability to deeply integrate with the Coinbase ecosystem natively and provide developers with a one-stop Web3 infrastructure.

Krain AI chooses to deploy on Base chain precisely based on its excellent transaction performance and developer-friendly ecosystem. With the support of Base, Krain AI platform can realize high-speed and low-fee operation of AI agent invocation, contract execution and user payment, providing a solid base for AI application chaining.

- MoonPay

MoonPay is the world's leading crypto asset payment and fiat currency portal platform, providing crypto payment services covering over 200 countries. Its one-click purchase, KYC compliance, and API integration capabilities are widely favored by the world's mainstream DApp and NFT platforms, and it is a key hub in the Web3 ecosystem connecting traditional finance and crypto assets.

Krain AI's integration with MoonPay is designed to help users around the world seamlessly purchase $KRAIN tokens in fiat currency, further lowering the threshold for users and promoting the globalization of the platform, and strengthening Krain AI's ability to build a compliant payment infrastructure.

- EXODUS

Exodus is a renowned multi-chain crypto wallet with Web3 asset management platform that supports over 250 cryptocurrencies and integrates trading, pledging, browser extensions and NFT management. Its clean and easy-to-use interface and strong user base have made it one of the preferred wallets for crypto investors in North America and Europe.

Krain AI will complete wallet access, asset management and on-chain interaction optimization through Exodus integration, providing users with a convenient and secure AI agent calling experience. In the future, the two sides will also explore deeper cooperation on AI agent asset visualization and on-chain data analysis module.

- Phantom

Phantom is one of the most popular Solana wallets, has been extended to support Ethereum, Polygon and other multi-chain ecosystems, focusing on lightweight browser plug-ins and mobile operating experience.Phantom has excellent performance in user experience, DApp integration and identity management, and is the ideal entry point for new Web3 users.

By interfacing with Phantom, Krain AI is reserving expansion space for possible future multi-chain deployment plans (e.g. Solana AI compute layering module). At the same time, the partnership also helps the platform attract Solana eco-users and enhance multi-chain interaction capabilities and user coverage breadth.

7.2 Marketing and Promotion Strategies

1) User Acquisition

We will use a variety of methods to attract and increase users of the Platform in order to build a large and diverse user base. Our user acquisition strategy includes, but is not limited to, the following:

- Attractive Reward Programs: We will introduce attractive reward programs to incentivize new users to sign up and actively participate in Krain AI, which may include discounts on transaction fees and other special rewards.
- REFERRAL PROGRAM: The Krain AI Network will set up a referral program to encourage existing users to refer new users to join. Both referrers and referrals will benefit from this program, increasing the number of users while improving user loyalty.
- MARKETING PARTNERS: We will actively seek to partner with other programs and organizations to expand our user base. Partnerships will provide users with unique advantages and privileges while also increasing exposure for Krain AI.
- Community building: Krain AI will actively build communities, including social media communities, online forums and offline events. This will help expand the user base and increase interaction and engagement among users.

2) Branding

Branding is key to the successful rollout of Krain AI. We will use the following strategies to build and promote Krain AI's brand:

- MARKET POSITIONING: Krain AI is clearly positioned as a safe, innovative, user-friendly and highly credible generative AI platform. We aim to be a leader in the industry.

- Brand Reputation: We will build a positive brand reputation by actively focusing on user satisfaction and ensuring that we provide excellent service and support.

- Social Media and Publicity: We will post regular news, updates and market analysis about Krain AI, Krain AI tokens through various social media platforms, such as Twitter, LinkedIn, Telegram, etc., to build a closer connection with our users.

- Brand Consistency: We will ensure brand consistency in all marketing and promotional activities, including logos, website design, advertising and promotional materials.

3) Social Media

We will be leveraging social media platforms to promote Krain AI and Krain AI tokens. We will be conducting the following social media campaigns:

- Regular Updates: We will be posting regular updates and analysis about Krain AI, the Krain AI token market, trading strategies and platform features on our social media platforms.

- Interaction and Response: We will actively interact with users and respond to their questions, suggestions and feedback to enhance user satisfaction.

- Promotions: We will advertise and promote special events, contests and reward programs on social media to attract new users and incentivize existing users.

Through the above strategies, Krain AI, Krain AI Token will establish a strong brand image in the industry, attract more users and continue to expand our market share. We will be committed to maintaining communication and interaction with our users in order to fulfill their needs and expectations.

7.3 Compliance building

As the crypto market matures, countries that have relevant bills will further improve their regulatory systems, and some countries that have not yet enacted bills may step up their deployment, and it is expected that more countries will legislate for cryptocurrencies and assets in the future to promote the compliance of the market. According to statistics, the current global blockchain regulation has made good progress. since 2020, countries around the world have launched more than 200 policies in blockchain-related fields, and industrial development as well as financial regulation have become the most important areas of concern, accounting for 33%, 20% and 17%.

Krain AI is open to efforts to become compliant and embrace regulation.Krain AI will work collaboratively with regulators and law enforcement around the globe under the leadership of the DAO. Working to build a robust compliance program that includes anti-money laundering principles and tools used by financial institutions to detect and address suspicious activity, and has a proven track record of assisting law enforcement agencies around the world.

Krain AI's AML will be even more stringent than that done by traditional banks, with new controls and regulatory technologies to be implemented with organizations such as blockchain security intelligence firm CipherTrace, through multiple external anti-money laundering (AML) audits. At the same time, it is actively working with international anti-crime organizations such as UNODC and Interpol. In addition, a dedicated business security team will be set up within the platform to research the latest hacking methods and protect users from financial losses by hardening business processes.

In the future, we will continue to embrace regulation, work closely with global regulators and law enforcement agencies, and promote the pace of international development and rapid expansion based on compliance-based operations.

7.4 Development Routes

1) Setting the stage: AI agent discovery and engagement

• Launches $KRAIN Token to Power AI Adoption Economy

• Introducing an AI Application Discovery Engine with NLP-Enabled Search

• Community-driven reputation and audit system

2) AI application infrastructure: AI application deployment and hosting

• Linux containers for AI applications

• Deploy AI applications with a single click

• Cryptographic payment acceptance

3) Building AI application networks: application workflow infrastructure

• Incentive-based system to notify builders of new requirements

• AI App Workflow Builder for Complex Tasks

• User incentives for creating workflows

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Chapter VIII

Disclaimer

Krain AI complies with any regulations and industry self-regulatory affirmations that are conducive to the health of the industry. By participating, Participants fully accept and comply with such checks. Also, all information disclosed by the participant to complete such checks must be complete and accurate. The Krain AI tokens involved in the project are cryptographic digital codes used on Krain AI, and do not represent equity, claims, rights to income or control of Krain AI. The Platform also hereby expressly disclaims and rejects the liability described below:

- No person may swap assets in a manner that would violate the anti-money laundering, counter-terrorist financing or other regulatory requirements of any country;
- No person shall purchase Krain AI tokens in breach of any representation, warranty, obligation, promise or other requirement set forth in this White Paper and the resulting inability to use or withdraw the Digital Currency;
- Delays or postponements of Krain AI token upgrades and the resulting inability to reach a pre-disclosed schedule;
- Errors, defects, flaws or other issues with the Krain AI Token source code;
- Failure, crash, paralysis, rollback or hard fork of the Krain AI token;
- Failure to fulfill any particular function or unsuitability for any particular purpose;
- Failure to make timely and complete disclosures regarding the development of Krain AI tokens;
- Any participant has disclosed, lost or destroyed the wallet private key;
- Default, breach, infringement, crash, paralysis, termination or suspension of service, fraud, misfeasance, misconduct, mistake, negligence, bankruptcy, liquidation, dissolution, or winding up of business of Third Party Distribution Platform;
- The content of any engagement with a third-party distribution platform differs, conflicts or contradicts the content of this White Paper;
- Anyone speculating on Krain AI tokens, listing, suspension or delisting on any trading platform;
- Krain AI Tokens are classified or deemed by any government, quasi-government agency, authority or public body to be a currency, security, commercial paper, negotiable instrument, investment, or other thing so as to be prohibited, regulated, or legally restricted;
- Any of the risk factors disclosed in this White Paper, and the damages, losses, claims, liabilities, penalties, costs or other negative impacts associated with, resulting from or in connection with such risk factors.

The contents of this document shall not be construed as compelling participation in the Token Public Offering. Any behavior related to this white paper shall not be considered participation in the Token Public Offering, including requesting a copy of this white paper or sharing this white paper with others. Participation in the Token Public Offering means that the Participant has met the age criteria, has full capacity for civil behavior, and that the contract with the Krain AI team is genuine and valid. All participants enter into the contract voluntarily and have the clear and necessary understanding of the Krain AI Token prior to entering into the contract.

The Krain AI team will continue to make reasonable attempts to ensure that the information in this whitepaper is true and accurate. During the development process, the platform may be updated, including but not limited to the platform mechanism, tokens and its mechanism, and token distribution. Some parts of the document may be adjusted accordingly in the new version of the white paper as the project progresses, and the team will publicize the updates through announcements on the website or the new version of the white paper. Participants are encouraged to obtain the latest version of the white paper and adjust their decisions accordingly.The Krain AI team expressly disclaims any and all liability for any damages incurred by Participants as a result of (a) reliance on the contents of this document, (b) inaccuracies in the information contained herein, and any actions taken by GiD as a result of the contents of this document. The team will make every effort to achieve the goals mentioned in the document, however, due to force majeure, the team cannot make a full commitment to fulfillment.

The value of the tokens will depend on the laws of the market and the needs of the application when it is implemented, and they may not have any value, and the team does not make any commitment to their value appreciation and is not responsible for the consequences of their increase or decrease in value. To the fullest extent permitted by applicable law, the Team shall not be liable for damages and risks arising from participation in the public offering of tokens, including, but not limited to, direct or indirect personal damages, loss of business profitability, loss of business information, or any other economic loss.

The Krain AI team clearly communicates the possible risks to participants, and by participating in the Krain AI Token Public Offering, participants confirm that they understand and acknowledge the terms and conditions set forth in the Bylaws.