

Xally AI

Empowering AI Agents on Bitcoin L2

<https://xally.ai>

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Abstract

The rapid advancement of AI has transformed various industries, presenting both opportunities and challenges for deploying AI applications on blockchain. Xally Chain, a Layer 2 scaling solution built on the Bitcoin network, addresses these challenges by providing a comprehensive ecosystem that combines cutting-edge AI technology with the security and transparency of blockchain.

Our four-layered ecosystem – infrastructure, AI resources, AI agents, and real-world applications – leverages Bitcoin's robust infrastructure and emerging Layer 2 tools to support advanced AI functionalities. By offering access to state-of-the-art AI models and tools and enabling multi-agent collaboration, we enhance accuracy and decision-making, transforming theoretical AI capabilities into tangible use cases within the cryptocurrency sector.

The modular architecture of Xally Chain, driven by the Bitcoin Virtual Machine (BVM) and pre-built AI modules, allows developers to create and deploy decentralized applications (dApps) efficiently. Additionally, we introduce an innovative approach to AI model ownership and distribution through tokenization.

By fostering a collaborative community, providing a launchpad for AI projects, and employing advanced technologies, we aim to drive innovation and adoption at the intersection of AI and cryptocurrency.

This white paper explores our technical architecture, ecosystem components, and potential applications, demonstrating Xally's potential to revolutionize the AI industry and empower stakeholders in their pursuit of deploying AI applications on blockchain.

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Introduction

The rapid advancement of AI has revolutionized various industries, transforming the way we live, work, and interact with technology. As AI becomes more integrated into our daily lives, the industry faces significant challenges that require careful consideration and strategic solutions.

The AI industry has experienced a surge in investments, driven by attractive returns and the decreasing costs of building AI applications. Companies are rushing to incorporate AI into their products and processes, including in the realm of web3. The model-as-a-service approach has greatly simplified the process of building AI applications, enabling developers to leverage pre-trained models and fine-tune them for specific tasks. This has significantly reduced barriers to entry, allowing startups and small businesses to compete with larger players and create AI-powered solutions more quickly and efficiently.

However, the seemingly limitless potential of AI can be enticing, prompting developers to dive into creating applications without fully grasping the challenges that lie between concept and execution. This gap between the idea and the reality represents a significant hurdle in the AI industry. Here are some challenges that AI developers must confront:

The Rapid Pace of AI Advancements

The AI industry is marked by rapid and relentless advancement, posing significant challenges for organizations. The fast-paced evolution of AI technology, with new models like Claude 3, GPT-4, and Llama 3 quickly surpassing one another, underscores the industry's volatility.

As organizations eagerly await the arrival of future models like GPT-5, the need for agility and adaptability becomes paramount. To remain competitive, companies must constantly update their technologies and strategies, keeping pace with the rapid cycle of innovation.

For developers, this means continually adjusting workflows, prompts, and data management to accommodate the unique characteristics of each new model. The ongoing adaptation and frequent technological shifts can disrupt established workflows

and impact user experiences, creating significant operational challenges for organizations striving to stay at the cutting edge of AI.

AI Interface Challenge

Developing a suite of user-friendly interfaces and tools that allow for seamless interaction with AI applications and easy integration into diverse products is a critical challenge. This involves creating intuitive web and desktop apps, browser extensions for efficient AI queries, bots for chat applications, and plugins for widely-used platforms. The design and development of these interfaces must be continuously innovative and adaptable to meet users' functional needs while integrating effectively with the fast-evolving AI technology landscape.

AI Evaluation Gap

Addressing the growing disparity between the rapid advancement of AI technologies and the lagging development of standardized, high-quality evaluation methods and benchmarks is a significant challenge. While the increased interest in AI evaluation has prompted the creation of new approaches, there is still a significant lack of standardization and quality control in this crucial aspect of the AI engineering pipeline.

Scarcity of GPUs

Last year, there were periods of GPU scarcity, making it difficult for some companies to find GPU vendors. As AI is forecasted to continue growing in the coming years, models will be upgraded, and fine-tuning will be required. GPUs are necessary for in-house organizations that want to fine-tune their own models. The scarcity of GPUs poses a challenge for these organizations, as they may struggle to secure the hardware needed to keep pace with the rapidly evolving AI landscape.

Proposed Solution

Xally Chain is a Layer 2 scaling solution built on top of the Bitcoin network, utilizing modular blockchain design principles to enhance scalability, flexibility, and adaptability. By leveraging the security and decentralization of the Bitcoin blockchain, Xally Chain aims to provide a robust platform for the development and deployment of AI applications.

Why We Choose Bitcoin Layer 2

Bitcoin's existing infrastructure provides several key strengths that make it an attractive platform for Layer 2 solutions and computation verification through frameworks like BitVM:

Bitcoin's robust infrastructure: By leveraging Bitcoin's secure, decentralized, and immutable base layer, we can ensure that our Layer 2 solution inherits these essential properties. The underlying proof-of-work (PoW) consensus mechanism provides unparalleled security, making computation results trustworthy and tamper-proof.

Maturity and reliability: Bitcoin's battle-tested infrastructure instills confidence in its ability to support advanced use cases like computation verification. With over a decade of operation, Bitcoin has proven its resilience and reliability, making it an ideal foundation for our Layer 2 solution.

Simplicity and stability: Bitcoin's simple scripting language prioritizes security and stability, reducing the attack surface and making it easier to ensure the correctness of off-chain computations. This simplicity aligns with our goal of providing a secure and reliable Layer 2 solution.

Network effects and adoption: As the most widely recognized blockchain, Bitcoin's large community can drive adoption and innovation in computation verification and Layer 2 solutions. By building on Bitcoin, we can tap into this vast network of users, developers, and businesses, accelerating the growth and impact of our solution.

Emerging frameworks and tools: The recent release of the BitVM framework has opened up new possibilities for Layer 2 solutions on Bitcoin. This development enables off-chain

computation verification and the potential for rollups, decentralized bridges, and EVM-compatible smart contracts. By building on Bitcoin Layer 2, we can leverage these emerging tools and contribute to the growing ecosystem of Bitcoin-based applications.

Technical Architecture

In this section, we delve into the core of Xally Chain's innovative approach to blockchain development: its modular architecture. By leveraging the power of Bitcoin Virtual Machine (BVM) and its pre-built AI modules and libraries, Xally Chain enables developers to rapidly create, test, and deploy dApps with real-world utility.

Xally Chain Modular Architecture

Application	AI Tokenized	Model Tokenized	dApps
Roll up	Optimism		
Consensus	Proof-of-stake (PoS)		
Data Availability	Bitcoin	Celestia	
Data Validation Module	Bitcoin Stamps		

Data Validation Module

The Data Validation module serves as the cornerstone of the Xally architecture, playing a pivotal role in ensuring the security and integrity of the entire system. This module is responsible for verifying the accuracy, consistency, and completeness of the data processed within the stack. By implementing robust validation techniques, such as input sanitization, data type checking, and range validation, the Data Validation module safeguards against potential vulnerabilities and malicious attacks.

Data Availability

Data availability (DA) layers establish agreement among base layer nodes on the state of rollups, providing a uniform view of a rollup's history and ensuring all necessary data is available. The DA layer acts as an immutable bulletin board for transaction data and proofs, ensuring liveness and allowing anyone to compute the next block if the last operator stops. This reinforces rollup security by maintaining a transparent record of transaction data and proofs, guarding against data withholding attacks.

We securely store data on decentralized storage networks like Celestia and Bitcoin, which offer advantages over traditional blockchain storage solutions.

Consensus: Proof-of-Stake (PoS)

We utilize Proof-of-Stake (PoS) as the consensus mechanism to enhance security and efficiency in our blockchain. PoS is a sustainable alternative to Proof-of-Work, allowing validators to participate in transaction validation and block creation by staking their tokens. This method not only reduces the energy consumption drastically but also minimizes the risk of network attacks, as validators have a financial stake in the integrity of the system. By adopting PoS, we aim to address the cryptocurrency industry's pressing issues, including environmental concerns and the need for scalable, decentralized consensus mechanisms.

Roll up: Optimism

Optimistic Rollup is an off-chain scaling solution. Transactions are executed off-chain, but the data is compressed and stored on the base layer to achieve consensus and verify the integrity and availability of the data on the base layer.

Application

AI Models as NFTs and Tokens

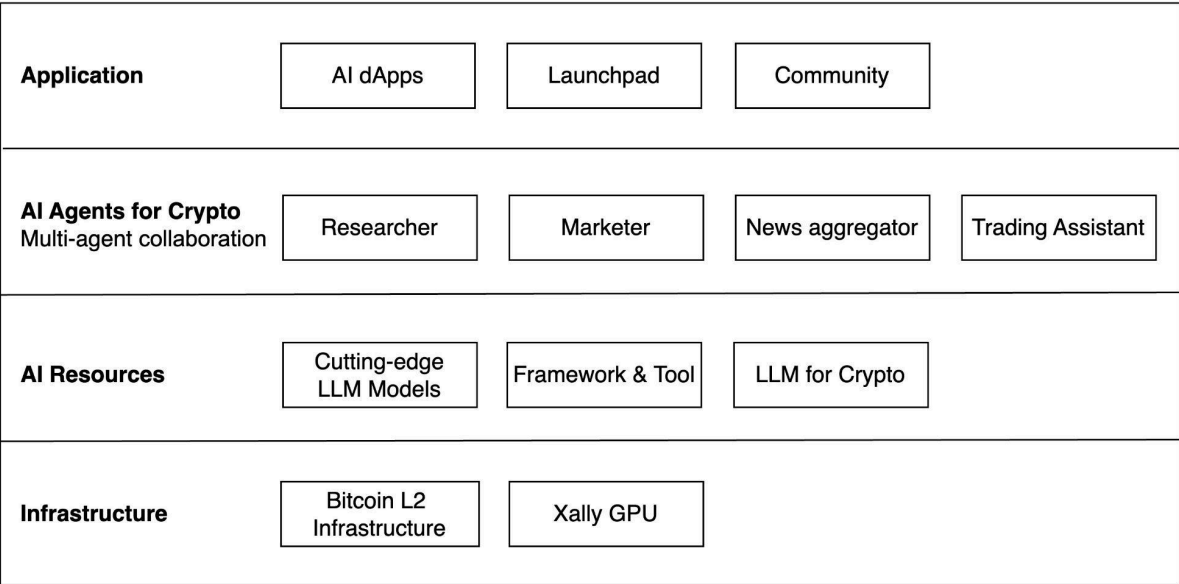
Xally Chain introduces a groundbreaking approach to AI model ownership and distribution by tokenizing AI models as NFTs using the BRC-721 standard. This transformation empowers creators with full control over their AI creations while enabling secure and transparent transactions on the blockchain. Each AI model, represented as a unique NFT, opens up a dedicated marketplace for AI models where users pay a fee to access them, providing creators with revenue generation and trading opportunities.

Furthermore, the tokenization of AI models using the BRC-20 standard allows for the creation of AI tokens that serve as governance tokens. These tokens grant holders a say in crucial decisions regarding the AI model's development, application, and monetization strategies. By facilitating a broader distribution of the AI model's value among investors, users, and contributors, tokenization aligns the interests of all stakeholders, ensuring that the AI model is developed and utilized in ways that maximize its value and utility.

Xally Ecosystem

Xally Chain leverages advancements in Bitcoin Layer 2 to provide a comprehensive ecosystem that combines cutting-edge AI technology with the security and transparency of blockchain. Our platform's four-layered approach ensures a smooth and efficient experience for developers, businesses, and users, with the native \$XALLY token being utilized for transaction fees, staking, and AI operations.

Xally Ecosystem



Layer 1: Infrastructure

Bitcoin L2 Infrastructure

The Bitcoin L2 infrastructure is built on a scalable and secure blockchain with a governance model driven by a native token economy. This infrastructure allows AI agents to operate efficiently and effectively, leveraging the blockchain's security and scalability for complex computations and large transaction volumes. The technical architecture supports advanced AI functionalities and enables the integration of AI into various applications.

Xally GPU

Xally, working closely with GPU providers, offers high-performance GPUs, such as the H100 and 4090, specifically designed for training AI agents and chatbots. These GPUs contribute to the processing power needed for intensive AI computations, allowing developers to build sophisticated AI models that process and analyze data quickly.

Layer 2: AI Resources

Layer 2 of our infrastructure is devoted to supplying an extensive range of AI resources designed exclusively for cryptocurrency applications, enabling innovation and enhancing user experiences as the crypto ecosystem progresses.

AI Model-as-a-Service

AI Model-as-a-Service (AlaaS) revolutionizes how organizations integrate, train, and deploy state-of-the-art AI models. By providing access to cutting-edge AI technologies through a flexible and efficient platform, AlaaS empowers AI teams to drive innovation and achieve significant performance improvements.

Through AlaaS, organizations can access pre-trained models, customize them to their needs, and deploy them efficiently, reducing infrastructure investments and development time.

AI Framework & Tools

We collaborate with top engineers to provide the best frameworks and tools that integrate seamlessly into existing workflows. Our AI framework includes tools such as calendars, email management, alerts, code interpretation, and advanced search capabilities. The Retrieval Augmented Generation (RAG) framework and our comprehensive AI evaluation framework are designed to enhance the functionality and integration of AI within the crypto space, making it easier for developers to implement and scale their applications.

LLM for Crypto

We offer a specialized LLM dedicated to cryptocurrency, powering a unique AI-driven search engine that caters specifically to the web3 environment. This engine excels in gathering information from various social channels, including tweets and audio from Twitter Spaces, using advanced speech-to-text transcription to process voice data. By leveraging our LLMs, the engine can extract valuable insights from both text and voice data, providing a search experience that dives deep into the nuances of decentralized finance.

Together, these resources form a robust AI ecosystem that is specifically designed to meet the dynamic needs of the cryptocurrency sector, ensuring that developers and users alike can leverage AI to achieve superior outcomes in their crypto-related endeavors.

Layer 3: AI Agents for Crypto

AI resources are necessary but not sufficient for building a high-quality application. To improve accuracy, reduce hallucination, and increase the power of an application, AI agents are needed. AI agent workflows will likely drive significant AI progress this year, potentially even more than the next generation of foundation models. This is a crucial trend that everyone working in AI should pay attention to.

In the fast-paced world of cryptocurrency, AI agents are essential for enhancing application functionality and decision-making accuracy. The third layer of our infrastructure focuses on deploying specialized AI agents for various crypto-related tasks, such as market analysis and smart contract auditing. These agents not only perform individual tasks but also collaborate in complex, multi-agent operations.

AI Agents

Our pre-built agents are designed to take on specialized roles, such as researchers, marketers, and automated traders. For example, a "Project Analyzer" agent can analyze a cryptocurrency project's whitepaper, extract key insights, and summarize important points. This is valuable for investors and developers who need to quickly understand new

initiatives. Agents can also automate routine tasks like setting smart alerts or assisting in trading, improving productivity and decision-making in the volatile crypto market. Other potential agents include a Smart Contract Auditor and a News/Insights Aggregator.

Multi-agent Collaboration

The real power of AI agents in the cryptocurrency context lies in multi-agent collaboration. This involves prompting different LLMs to take on specialized roles for various components of a task, similar to a team of experts working on a larger project. For instance, one agent might focus on data gathering, another on analysis, and another on execution, such as trading. This division of labor allows for more refined and accurate outputs, as each agent builds on its iterative learning and specific expertise.

Agents can also recall past interactions, enhancing their performance over time and enabling more sophisticated planning and tool use. The complex interaction of these agents results in a system where continuous communication and adjustment drive the successful completion of complex tasks.

Layer 4: Application

The top layer serves as the practical application tier, transforming theoretical AI capabilities into tangible, real-world use cases within the cryptocurrency sector.

AI dApps

This component is crucial for developers ranging from individuals to small teams who aim to build decentralized applications. Leveraging prebuilt components and advanced AI resources, our infrastructure enables the rapid development and deployment of dApps. These applications can harness the full potential of AI to operate autonomously, interact with smart contracts, and provide innovative services directly to users in the crypto ecosystem. Our platform ensures that even those with limited resources can access cutting-edge technology to build and scale their applications efficiently.

Launchpad

Xally's launchpad acts as a springboard for AI projects, providing them with access to crowdsourced global funding and a network of AI professionals. This initiative is designed to accelerate the development lifecycle of projects by connecting innovators with the capital and expertise they need to bring their ideas to fruition. The launchpad not only supports the technical aspects of AI projects but also aids in navigating the complex regulatory and economic landscapes of the crypto world.

Community

The foundation of any thriving ecosystem is its community, and our platform fosters a space where individuals can share technical expertise, experiences, and resources. This collaborative environment enhances collective learning and problem-solving, enabling both newcomers and veterans in the cryptocurrency community to leverage each other's strengths. Collaborative marketing efforts within the community also amplify the reach and impact of individual projects, creating synergies that benefit the entire ecosystem.

\$XALLY Token

Xally ecosystem provides a seamless and efficient environment for developers, businesses, and users. Our native XALLY token facilitates transactions, staking, and AI operations, reinforcing its role as the essential fuel of the ecosystem.

For XALLY Holders:

1. **Governance:** XALLY token holders can participate in the governance process of the Xally ecosystem by voting on important decisions and proposals, shaping the future direction.
2. **Fee Discounts:** Owners of XALLY tokens enjoy reduced fees on all dApps created by the Xally team, making it more cost-effective to use these applications.

3. **Staking Rewards:** By staking their XALLY tokens, holders can earn rewards from various dApps within the Xally ecosystem, incentivizing active participation and token holding.
4. **Priority Access:** Holding XALLY tokens grants early access and special privileges for new projects launched on the Xally launchpad, providing a head start on new investment opportunities.

XALLY Utilities and Use Cases:

As the first AI-focused launchpad on Web3, Xally provides a platform not only for launching AI projects but also for accessing AI resources, significantly expanding the token's applicability throughout the AI development process.

1. **Xally Chain Transactions:** Users can pay gas fees on the Xally Chain using \$XALLY tokens, streamlining operations within the ecosystem.
2. **Xally dApps Currency:** XALLY serves as the currency for dApps developed by the Xally team, enabling seamless transactions across the network, including paying subscription package for Xally Agents
3. **AI Model Access and GPU Power:** Access powerful LLM models and GPU resources to train or fine-tune AI models, using XALLY to cover computational costs.
4. **Pre-built AI Agents:** Developers can utilize pre-built AI agents, which are in high demand due to the ease they bring to AI development, to create their own dApps within the Xally ecosystem.

By leveraging the \$XALLY token, users can seamlessly participate in the Xally ecosystem, access AI resources, and benefit from the various utilities and incentives offered, fostering innovation and growth within the Web3 AI landscape.

Roadmap

Q2/2024

- Showcase Xally Agent beta version
- Xally Chain Testnet
- Launchpad IDO

Q3/2024

- Alstarter: the first Web3 launchpad for AI projects
- Onboard at least 3 dApps on Xally Chain with 200K active wallets:
 - Xally Agent: a platform to simplify creating agent chatbot for everyone.
 - AI Foundry: a platform where users can create, share, and discover AI-generated NFT.
 - ArtCanvas: the revolutionary AI Art Generator application.
- AI Agent for Crypto Research
- AI Model-as-a-Service (AlaaS): provide customization options for businesses to tailor models to their needs.

Q4/2024

- Grow to 10 dApps on Xally Chain with 500K active wallets.
- Multi-Agent Collaboration.

2025 and beyond

- Grow to 100 dApps on Xally Chain with more than 1M active wallets.
- AI Agent for Smart Contracts development and auditing.

- LLMs tailored for the Crypto industry.

Conclusion

In this whitepaper, we have presented Xally as a pioneering solution that addresses the major challenges faced by the AI industry. By harnessing the power of the Bitcoin network and leveraging cutting-edge AI tools and frameworks, we have created a comprehensive ecosystem that empowers developers, businesses, and stakeholders to deploy AI applications on blockchain with unprecedented ease and efficiency.

Our four-layered ecosystem – infrastructure, AI resources, AI agents, and real-world applications – combined with our modular architecture, driven by the Bitcoin Virtual Machine (BVM) and pre-built AI modules, provides a solid foundation for the development and deployment of AI-powered dApps. This innovative approach streamlines the development process and enables the creation of powerful, secure, and scalable AI solutions within the cryptocurrency sector.

As we move forward, Xally is poised to become a catalyst for the widespread adoption of AI applications on blockchain. We invite developers, businesses, and stakeholders to join us on this exciting journey as we shape the future of AI and blockchain technology together. With Xally, the possibilities are endless, and we are confident that our platform will play a pivotal role in driving the next wave of innovation in the AI and cryptocurrency industries.