Satori Chain: The Decentralized Future Prediction Blockchain

Abstract. The Satori Chain is the Proof-of-Work blockchain supporting The Satori Network; a network designed to forecast the future at scale. Forked from Evrmore (EVR), The Satori Chain inherits Evrmore's advanced DeFi primitives and capabilities. Ultimately hailing from Bitcoin, The Satori Chain uses the UTXO model, is open source, and can be used and further developed worldwide. The Satori Chain extends the architecture by adding support for assets as a "bundle of rights" model, implementing the Thunder protocol for instant free transactions, and other innovations to support decentralized AI focused on temporal patterns and predictions. The network consists of Satori Neurons (AI software instances) that share predictions rather than model weights, enabling efficient parallelization and decentralization. The Satori Chain aims to support the production of future prediction as a public good while supporting private competition and collaboration through its native mechanisms.

Introduction

"Satori" is a term from Zen Buddhism referring to a sudden moment of enlightenment or awakening. True to its name, The Satori Chain represents an awakening to the potential of decentralized intelligence on the blockchain.

The Satori Chain in Context

The Satori Network (the network of future predicting AIs) implies the existence of an underlying decentralized consensus layer. The Satori Chain serves as the foundation for the entire Satori ecosystem.

Basic Conceptual Layers of the Satori Ecosystem	
Satori	Language models, interfaces and APIs for users to interact with and glean future insight from The Satori Network.
The Satori Market	A marketplace of datastreams; for both real-world data and predictions on real-world data.
The Satori Engine	AI Engine, plugins and ancillary software and technology used on The Satori Network.
The Satori Network	Peer-to-peer network of prediction datastreams, prediction rewards, electrumx and thunder servers.
The Satori Chain	Proof of Work consensus on transaction. Facilitates the AI value-protocol of The Satori Network. Critically compatible with free micro transactions via The Thunder protocol.

The Journey from Token to Chain

The Satori Network initially materialized with a token on the Evrmore blockchain, embodying a vision of decentralized AI focused on predicting the future. This whitepaper outlines The Satori Chain, the next evolution in this journey: a dedicated blockchain that elevates Satori from a token to a native coin while preserving and enhancing the core vision of temporal prediction through distributed intelligence.

Satori Network Architecture

The Satori Chain architecture is designed to support a network of Satori Neurons - AI software instances that predict the future of datastreams.

Satori Neurons

A Satori Neuron is the computational-memorial unit of The Satori Chain network. It consists of:

- **Automated Machine Learning Engine**: Constantly improves models to better predict subscribed datastreams.
- **Blockchain Interface**: Interacts with The Satori Chain blockchain for incentives, coordination, and reputation tracking.
- **Publish-Subscribe Interface**: Communicates with other neurons by publishing predictions and subscribing to datastreams.

Satori Neurons are designed to run on commodity hardware, including home PCs and even Raspberry Pi devices, making the network truly accessible and decentralized.

Publish-Subscribe Network

The Satori Network takes in real-world data and outputs predictions on those datastreams:

- **Data Input**: Neurons subscribe to one or more real-world datastreams (e.g., hourly temperature in a city, daily closing price of a stock).
- **Prediction Processing**: When a new datapoint is added to a subscribed stream, the Neuron produces a prediction of future datapoints.
- **Prediction Publishing**: These predictions are broadcast to the network as prediction datastreams, freely available to other neurons and users.

Network Intelligence Optimization

The Satori Chain implements the principle of Unique Redundancy, similar to the brain's architecture:

- Multiple neurons predict the same datastreams, providing redundancy.
- Each neuron has a unique set of inputs and model architecture, ensuring diversity.
- Predictions can be aggregated to produce more reliable forecasts (wisdom of the crowd).

This approach allows the network to achieve sophisticated intelligence through the collective contribution of simple, individually limited nodes.

Unique Approach to Decentralized AI

The Satori Chain differs fundamentally from other AI blockchain projects. Rather than coordinating model weights or parameters (the traditional approach to distributed AI), The Satori Chain focuses on sharing predictions. This approach has several advantages:

- **Datastreams over datasets**: The Satori Chain treats the world as a collection of datastreams rather than static datasets, recognizing that all measurable phenomena change over time.
- **Temporal over spatial patterns**: While spatial pattern recognition is important, temporal pattern recognition - predicting how data will change over time - is the essence of intelligence in action.
- **Predictions over parameters**: By sharing predictions rather than model weights, The Satori Chain enables greater decentralization, efficiency, and flexibility in the types of AI models that can participate.

As a generalization, other approaches to Decentralized AI tend to fall into two categories: either they use a more or less open network to distribute the compute necessary to build a single, large, centralized model or they attempt a highly customized network of disparate models approximating a 'society of minds' approach.

The first approach is useful but ultimately amounts to simply socializing the compute cost of training large models. The second approach is theoretically very useful but in practice very labor intensive, complicated and fragile. Both approaches have had limited success in the domain of time series prediction.

The Satori Network embodies a "middle way," so to speak, as it optimizes for the best of both approaches and avoids the pitfalls or extra costs of each.

Being focused on temporal patterns it is specialized enough to make a general AI Engine reducing the cost of human labor in two main ways: model creation and training itself, and not requiring any custom APIs to allow models to interact with one another since they all speak the same underlying language. The Satori Network is a 'society of like minds.'

Furthermore, the models generated on The Satori Network are directly wired to and inform each other. Far from using the network to source compute power for a centralized model, the network itself is the truly decentralized and living model.

This approach, The Satori Network design, requires many compute nodes which are highly interconnected. The Satori Chain is the decentralized and permissionless blockchain built to support these unique requirements.

Technical Foundations

The Satori Chain inherits and builds upon the technical foundations established by Evrmore, which itself was built on Ravencoin and Bitcoin.

Bitcoin-Based UTXO Model

Like its predecessors, The Satori Chain employs the Unspent Transaction Output (UTXO) model pioneered by Bitcoin. This architecture provides a secure, auditable, and scalable foundation for financial transactions. The UTXO model's simplicity and robustness provide a solid foundation for The Satori Chain's innovations.

DeFi Primitives from Evrmore

The Satori Chain inherits the following DeFi primitives from Evrmore:

- **Asset Management**: Native support for asset creation, transfer, and management.
- **P2SH**: Pay-to-Scripthash capability for advanced transaction logic, enabling–critically–the ability for Satori to implement the Thunder Protocol.
- **Atomic Swaps**: Two-step on-chain atomic swaps using SIGHASH_SINGLE|SIGHASH_ANYONECANPAY.
- **Level-1 and Level-2 DEX Support**: Support for simple and complex trading orders.

These capabilities provide The Satori Chain with a robust foundation for financial applications, enabling complex economic incentives vital to its decentralized AI ecosystem.

Extensions for Decentralized AI

Building on these foundations, The Satori Chain extends the architecture to support decentralized AI focused on temporal prediction:

- **Prediction Marketplaces**: Built-in support for creating and managing prediction bounties and competitions, and free micropayments over time using the Thunder Protocol.
- **Bundle of Rights Asset Model:** The Satori Token itself is seen as a bundle of rights - rights to execute certain utilities on the network. Those that hold the token can delegate the various rights to whatever address they prefer.
- **Stream Indexing and Discovery**: Efficient mechanisms for discovering and accessing relevant prediction streams.

Consensus Mechanism

Proof-of-Work Mining

The Satori Chain uses Proof-of-Work consensus KawPow.

Block Rewards

The block reward structure follows a model similar to Evrmore with adjustments to support The Satori Chain's unique requirements:

- **Proof of Work Mining Rewards**: 15% of block rewards go to proof of work miners, ensuring network security and decentralization.
- **Prediction Rewards**: 70% of the block reward is allocated to the decentralized network of future predictors.
- **Development Allocation**: 14% of block rewards are allocated to The Satori Association to fund ongoing development, grants, and ecosystem growth.
- **Founders Fee:** 1% to the founder

Thunder Protocol

Thunder Protocol is an innovative payment solution that enables secure off-chain transactions with on-chain settlement, creating a trustless environment where either both parties agree to release funds, or the sender automatically regains control after a predefined period - all without revealing transaction details until final settlement. Using advanced P2SH (Pay-to-Script-Hash) technology, it allows multiple instant transactions to occur between parties with zero counterparty risk.

Prediction as a Public Good and Market

Satori promises two complementary components:

Public Good Offering

The Satori Chain supports the production of future prediction as a public good through specific blockchain mechanisms:

- **Public Registry of Datastreams**: The blockchain maintains an on-chain registry of available datastreams, making discovery efficient while minimizing transaction costs. This registry acts as a directory, enabling users to find relevant prediction streams without having to search the entire blockchain.
- **Transparent Prediction Attribution**: The Satori Chain records which Neurons are predicting which datastreams, establishing an accountability and reputation system. This record is maintained with minimal on-chain footprint by storing only the essential linking information.
- **Incentivized Open Access**: To earn mining rewards for predictions, Neurons must make their prediction datastreams unencrypted and freely accessible. This requirement is enforced through the consensus mechanism, creating an economic incentive for providing public predictions.
- **Off-Chain Storage with On-Chain Verification**: To manage transaction costs, the actual prediction data is stored off-chain in the publish-subscribe network, while cryptographic proofs and quality metrics are recorded on-chain. This hybrid approach balances transparency with efficiency.

Market Ecosystem

Alongside the public good offering, The Satori Chain supports a rich market environment for predictions:

- **Instant Free Microtransactions**: Using the upcoming Thunder protocol Satori offers instant free microtransactions, allowing for continual and dynamic payment for raw data and predictions.
- **Private Predictions**: Enhanced or specialized prediction services available through the marketplace.
- **Prediction Bounties**: Rewards for accurate predictions on specific topics or datastreams.
- **Prediction Competitions**: Structured challenges to improve prediction accuracy and techniques.
- **Algorithm Marketplace**: A venue for sharing and monetizing specialized training algorithms as plugins to the AI Engine.

This dual approach ensures that basic prediction capabilities are available to all while creating economic incentives for continued innovation and specialization.

Use Cases

The Satori Chain enables a wide range of applications centered around future prediction:

Financial Forecasting

- **Market Predictions**: Forecasts of stock, cryptocurrency, and commodity prices.
- **Economic Indicators**: Predictions of interest rates, inflation, GDP growth, and other macroeconomic variables.
- **Risk Assessment**: Probability estimates for financial events and scenarios.

Supply Chain and Logistics

- **Demand Forecasting**: Predictions of product demand for inventory optimization.
- **Shipping Delays**: Forecasts of transportation times and potential disruptions.
- **Resource Allocation**: Optimal distribution of resources based on predicted needs.

Weather and Climate

- **Short-term Weather**: Localized weather predictions for specific locations.
- **Extreme Event Forecasting**: Early warning for storms, floods, and other weather events.
- **Climate Trends**: Long-term predictions of climate variables.

Social and Political Events

- **Election Outcomes**: Forecasts of voting results and political developments.
- **Social Trends**: Predictions of social media trends, consumer preferences, and cultural shifts.
- **Event Risk Assessment**: Probability estimates for social and political events.

Cross-Chain Oracle Services

- **DeFi Oracle**: Providing prediction-based data to other blockchain protocols.
- **Smart Contract Triggers**: Future predictions can serve as triggers for smart contract execution.
- **Risk Management**: Supplying risk assessments for insurance and financial protocols.

Tokenomics

SATORI: Native Coin

With the creation of The Satori Chain, Satori transitions from an Evrmore token to the native coin of its own blockchain.

Supply and Distribution

- **Initial Supply**: Based on a snapshot of existing SATORI tokens on Evrmore, totaling about 600,000 tokens.
- **Maximum Supply:** For practical purposes, this can be considered to be about 5 million tokens. This represents the most number of tokens that will exist for the foreseeable future. Ultimately, with a hardcoded eventual 2% inflation, the number is eventually infinite.
- **Block Time and Cycles**: One minute blocktimes as is default in Evrmore, following the tokenomics originally planned in the SATORI token on Evrmore.
- **Emission Schedule**: Satori's unique 'halving' differs from the norm by creating a near linear inflation rate for the first several cycles, by reducing the inflation rate by a factor of the golden ratio each cycle.

Utility

The SATORI coin serves multiple functions within the ecosystem:

- **Transaction Fees**: Paying for blockchain operations.
- **Staking**: Prediction participation.
- **Governance**: network governance and voting on proposals.
- **Stream Prioritization**: Voting on which datastreams deserve network attention.
- **Decentralized Prediction Marketplace**: Incentivizing future forecasts services.
- **Service Access**: Paying for enhanced prediction services.
- **Prediction Bounties**: Funding and rewarding specific prediction tasks.
- **Competition Prizes**: Rewards for winning prediction competitions.

Migration from Evrmore

The Satori Chain will launch with a snapshot-based migration, where holders of SATORI tokens on Evrmore can receive the equivalent native SATORI coins on the new chain after launch. This ensures continuity for the existing community while enabling the transition to an independent blockchain.

Development Roadmap

The Satori Chain's development will proceed in phases:

Phase 1: Foundation

- Fork Evrmore codebase to create The Satori Chain.
- Implement Satori’s unique emission schedule and minting manifest.
- Launch testnet with initial Satori Neuron implementation.
- Develop migration tools for SATORI token holders.
- Develop and test the Thunder protocol on testnet.

Phase 2: Mainnet Launch

- Execute snapshot and launch mainnet.
- Release Satori Neuron software for public use.
- Implement core reputation and quality assurance mechanisms.
- Launch basic prediction explorer interface.

Phase 3: Ecosystem Growth

- Develop prediction marketplace features.
- Implement bounty and competition frameworks.
- Release improved Neuron software with enhanced AI capabilities.
- Establish cross-chain oracle capabilities.

Phase 4: Advanced Features

- Implement advanced prediction aggregation techniques.
- Develop specialized industry-specific prediction solutions.
- Establish formal governance mechanisms.
- Expand cross-chain integrations and partnerships.

Team and Governance

The Satori Chain will be developed and maintained by:

Echelon Technology Group

Similar to Evrmore's foundation structure, Echelon Technology Group will:

- Manage the development allocation from block rewards.
- Issue grants for ecosystem development.
- Coordinate with the community on governance decisions.
- Support research and education in decentralized AI.

Community Governance

The Satori Chain aims to transition to a community-driven governance model over time:

- **Direction Voting**: Community voting on development priorities.
- **Improvement Proposals**: Formal process for suggesting and approving changes.
- **Participatory Treasury**: Community input on allocation of development funds.

Conclusion

The Satori Chain represents a unique integration of blockchain technology and artificial intelligence, focused specifically on the task of predicting the future. By elevating Satori from a token to the native coin of its own specialized blockchain, The Satori Chain creates a platform that can fully realize the vision of scalable permissionless decentralized temporal prediction.

Building on the solid foundation of Evrmore's DeFi primitives and Bitcoin's security model, The Satori Chain adds the crucial layer of AI primitives needed to support a network of distributed predictive intelligence. This combination creates a powerful platform that can deliver reliable future forecasting as both a public good and a market-driven ecosystem.

As the world grows increasingly complex and interdependent, the ability to anticipate future developments becomes more valuable than ever. The Satori Chain aims to democratize this capability, making reliable predictions accessible to all while creating economic incentives for continued innovation in decentralized intelligence.

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