AI Case Study
By Ritika Milind Rumde (9229; TE Comps A)

Topic : Artificial Intelligence and Smart Contract

Introduction:
Smart contracts and artificial intelligence (AI) are two of the most potential advanced technologies. Both have the ability to fundamentally alter a range of industries as well as how we live and work. What occurs when these two technologies combine, though? The explanation is that they open up new doors for automation and innovation that weren't previously open.

Known to be utilized with blockchain technology, smart contracts are computer programs that, under specific circumstances, directly manage the movement of digital money or assets between parties. Unlike regular contracts, smart contracts use code to convert the contractual terms into a computer program. However, since they are static in essence and cannot adapt to new circumstances due to their immutable nature, these programs are limited in the tasks they perform. As a remedy for this shortcoming, we propose a few novel use cases where we solve some of the huge problems in a wide array of domains by incorporating Artificial Intelligence in these programs called Smart Contract.

Background:
AI is the next logical evolutionary step for smart contracts. Currently, Smart Contracts are based on the decision based on the inputs and rules. AI can further the effectiveness of Smart Contracts by making them more adaptive. Such adaptive systems will include logic, neural graphs, and neural networks. The AI can generate and execute the Smart Contracts based on powering vital analysis i.e., the AI will be making the predictions whether or not the contract will be executed.

Methodology:
Let's study it through an application. Cortex is a decentralized platform for artificial intelligence (AI) execution and smart contracts. AI programmers can upload their models to the blockchain, after which smart contract and DApp programmers can access them by paying with CTXC, the native token of Cortex. The trust issue is resolved because the inference result no longer originates from a third-party Oracle thanks to Cortex's novel method for bringing AI inference directly on-chain. Essentially, Cortex investigates new possibilities when the Virtual Machine's computational capability is increased by a particular set of instructions. The computer language Solidity, which Ethereum developers use, can be used to create AI smart contracts. Although it adds infer instructions, Cortex's CVM is backward-compatible with EVM.

Results:
The well-established smart contracts become significantly more efficient when AI is added. The efficiency of the workflow of smart contracts has seen an unparalleled development, particularly with Blockchains. Its efficacy mostly results from the removal of human involvement in the contracts' verification. The negotiation process is streamlined and accelerated as a result.

Applications:

1. Decentralized autonomous organizations based on smart contracts are one of the most obvious ways that AI and smart contracts might interact (DAOs). These are businesses that operate solely by computer code, with no human involvement. These firms can benefit from the application of AI by automating decision-making procedures and managing challenging jobs. A DAO may, for instance, employ AI to streamline supply chain logistics or analyze financial data to choose which investments to make.

2. Using prediction markets based on smart contracts is another way that AI and smart contracts may come into contact. These markets, where bets can be placed on the results of events, are frequently used to estimate the likelihood of upcoming events. Artificial intelligence (AI) has the potential to evaluate vast volumes of data and produce more precise forecasts, which can be used to guide the actions of traders and investors.

3. Smart contracts and AI can be combined to produce new kinds of digital assets. An AI-powered hedge fund share may, for instance, be represented by a digital token made via a smart contract. The fund's investments would be automatically managed by the smart contract, and token holders would get earnings.

4. Lastly, new, more effective and secure forms of decentralized finance (Defi) can be developed using AI and smart contracts. For instance, a decentralized lending network that employs AI to underwrite loans and evaluate credit risk may be developed using smart contracts.

Discussion:

Several sectors, especially those that require complicated transactions and contracts, have the potential to be revolutionized by AI and smart contracts. The following are some benefits and drawbacks of utilizing AI with smart contracts:

Pros:

- Efficiency: Many smart contract operations can be automated with AI, which cuts down on the need for human interaction and boosts productivity.
- Accuracy: AI is capable of analyzing vast volumes of data and identifying patterns that humans might overlook, helping to assure the accuracy of smart contract execution.
- Transparency: Smart contracts are transparent, and integrating AI with them can increase the transparency and reliability of the entire process.
- Security: Blockchain technology, which is renowned for its security features, is the foundation of smart contracts. By identifying and thwarting fraudulent conduct, the addition of AI to smart contracts can further increase their security.

Cons:

- Complexity: Using AI and smart contracts together can make the entire process more difficult to implement and call for a greater level of technical skill.
- Reliability: Because AI is a young technology, there is always a chance that smart contracts can have errors or other problems.
- Legal Concerns: Because smart contracts are still a new technology, their legal position is still in flux. The addition of AI can make legal problems much more difficult, especially in terms of liability.
- Cost: Using smart contracts in conjunction with AI might be expensive, especially for smaller organizations that may not have the financial means to make such an investment.

Conclusion:

Despite these possible limitations, combining AI with smart contracts has many advantages and has the potential to revolutionize a wide range of businesses. In conclusion, AI-powered smart contracts are revolutionizing the blockchain ecosystem, enabling more efficient, secure, and cost-effective transactions. With the increasing adoption of blockchain technology, the demand for AI-powered smart contracts is expected to rise in the future, making it an exciting area to watch.

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