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# Research on the Direction of Blockchain Game Platform using AI

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## Abstract

AI blockchain technology, which is attracting attention as a core technology of the 4th Industrial Revolution, is a technology that can be used as an important means of innovation not only in the current gaming industry but also in various industrial fields.

This paper extracts the platforms and types of blockchain games currently ranked within the top 100 on the blockchain app (DApp) sites State Of The DApps, DApp.com, and Dapp Rader and introduces the top games on major platforms. As a result of extracting platforms and types, the top games were mainly based on Ethereum, EOS, and Steam. However, the results showed that there are significantly more games based on the Ethereum platform, which are stable, easy to apply, and have a low barrier to entry due to the large number of users and DApps.

We plan to improve awareness of blockchain games by studying the characteristics that only blockchain games have.

*Keywords: AI, Blockchain Technology, Blockchain Games, Dapp, Games, Platforms*

## 1. INTRODUCTION

With the development of blockchain technology, DApp (Decentralized Application) is a distributed application that allows smart contracts to be added and executed on a blockchain that allows parties to trust each other directly without the guarantee of a centralized third party such as a bank, company, institution, or government. The concept appeared[1].

The number of DApps has been rapidly increasing since early last year. A total of 2,432 DApps are registered on State of the Dapps, a DApp information site. DAU, the number of daily active users for all dApps, is around 54,130. Among the 2,432 DApps, games were the most released, with 491 [3].

The gaming industry is one of the industries where synergy with blockchain can be greatest. This is because it can transparently solve 'the possibility of item management and manipulation by game companies', which is a problem of existing game companies. Blockchain technology can enable P2P transaction of game items and assets without going through a game company [4].

NHN Entertainment unveiled the game-specific blockchain 'Pebble Project' at 'G-Star 2018' held in November last year. NHN Entertainment's 'Pebble Project' vision is to build a futuristic and progressive global gaming ecosystem using blockchain technology smartly. NHN Entertainment's goal is to achieve a distributed ledger, a payment system free from government regulations, a transparent cost structure, an automated token economy, and the production of additional profits through the 'Pebble Project'.

Elena Kang, head of strategic planning at Huobi Korea, predicted, "If the blockchain gaming industry develops, not only will it ensure transparency of probability items, but blockchain technology will also help solve problems facing the gaming industry in the future."[5] .

In keeping with the DApp era, not only global blockchain platforms such as Ethereum, Steam, and EOS, but also domestic blockchain companies such as Kakao, Dunamu, and Naver are actively working to attract DApps [6].

This paper analyzes the platform trends of blockchain games by extracting and analyzing the types of blockchain platforms mainly used by games within the top 100 on the blockchain app (DApp) sites State Of The Dapps, Dapp.com, and DApp Radar.

## 2. EXPERIMENTS
### 2.1 AI Blockchain Technology

The beginnings of blockchain began with the cryptocurrency counter Bitcoin in 2008 by a developer under the pseudonym Satoshi Nakamoto. Satoshi Nakamoto's paper proposed a P2P network (Peer-to-Peer) that performs proof-of-work to explicitly record transmission, which is the beginning of blockchain [7].
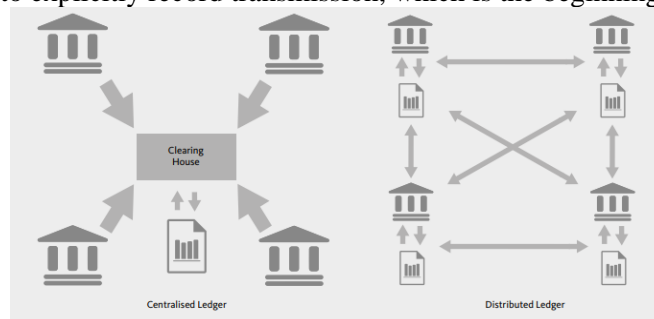


**Figure 1. Differences between existing transaction methods and blockchain methods[8]**

Payments can be made between individual computers. Payment records must be stored to confirm whether the payment is normal, and the process of approving and storing transactions is blockchain, which is also the core of the technical principle of 'Bitcoin' invented by Satoshi Nakamoto. Computers that voluntarily participate in the formation of the blockchain can be rewarded with new bitcoins, and this process is called mining. This is compensation for consuming CPU and enormous amounts of electricity while encrypting and storing the transaction process [9].

### 2.2 AI Blockchain Type

The China Electronics and Information Industry Development Institute (CCID), under the Ministry of Industry and Information Technology of China, announced the public blockchain and virtual currency technology evaluation rankings in February 2019.

赛迪全球公有链技术评估指数（第10期）
Global Public Blockchain Technology Assessment Index (X

| Pub-Blockchain | 分项指数 Sub-Index | | | 总指数 Total Index | 综合排名 Ranking |
|---|---|---|---|---|---|
| | 基础技术 Basic-tech | 应用性 Applicability | 创新力 Creativity | | |
| EOS | 103.7 | 20.0 | 26.9 | 150.5 | 1 |
| TRON | 96.8 | 24.6 | 24.1 | 145.6 | 2 |
| Ethereum | 73.8 | 29.0 | 36.4 | 139.2 | 3 |
| GXChain | 82.3 | 18.3 | 12.2 | 112.8 | 4 |
| BitShares | 86.9 | 13.9 | 8.6 | 109.5 | 5 |
| Ontology | 78.9 | 23.0 | 7.2 | 109.1 | 6 |
| NULS | 75.4 | 19.0 | 12.6 | 107.0 | 7 |
| Lisk | 65.7 | 15.3 | 26.0 | 106.9 | 8 |
| Steem | 85.1 | 9.7 | 10.1 | 104.9 | 9 |

**Figure 2. CCID World public blockchain technology evaluation table**

We are evaluating blockchain technology with faculty from Peking University, Tsinghua University, and Beijing Institute of Technology. A total of 35 public projects are targeted by scoring and ranking three items including technology, applicability, and originality. Among the 35 public blockchains, EOS ranked 1st, Ethereum 3rd, and Steam ranked 9th. 11]. EOS received high scores in the technology category, and Ethereum received the highest score, ranking first in the applicability and originality categories.

This paper analyzes Ethereum, Steem, and EOS, which are among the top 10 public blockchain technology evaluation scores selected by CCID.

## 2.3 Blockchain Platform

### 2.3.1 Ethereum

Ethereum developer Vitalik Buterin discovered the potential of blockchain, the underlying technology of Bitcoin, and realized that not only simple data but also physical assets, contracts, programming codes, etc. could be recorded in blocks, and set out to develop it. I tried. Since the Bitcoin blockchain does not have a central manager who manages the network and transactions, DDoS attacks using loops and code errors that cause an infinite loop can cause network paralysis (if there is a delay in block creation, there is concern about changing the blockchain record). . For this reason, there are limitations in developing smart contracts due to the use of a script language that eliminates loops, so we developed Ethereum, a new blockchain platform that improves Bitcoin's problems. It provides a Turing complete language so that various applications, including smart contract implementations, can be developed. According to the Ethereum white paper, it is introduced as a platform that can program anything using blockchain. The code that implements the smart contract is called Ethereum virtual machine code or EVM code [12].

### 2.3.2 Steem

The Steem public blockchain is a blockchain created with the main goal of providing direct financial compensation to various content producers, and uses the DPOS algorithm. Therefore, unlike POW and POS, it does not require fees from users and content producers, unlike other public blockchains, and provides sustainable rewards to content producers through inflation. Rewards are paid in Steem Power and Steem Dollars based on the Steem Power evaluated in the blocks of the Steem mainnet. Steem, Steem Power, and Steem Dollar correspond to blockchain mainnet, influence, and virtual currency that correspond 1:1 to the dollar, respectively.

Steem's main goal is to develop a community platform that provides sustainable, high-quality content on Reddit, a large overseas Internet community.

Intended for sustainability. This was realized through Steem, a public blockchain, and Steemit, a Steem DApp, and Steemit became the world's 9th largest community in terms of number of visitors, with 540 million people accessing it every month [13].

### 2.3.3 EOS

EOS, which was created to compensate for the shortcomings of Ethereum, is an altcoin that has attracted great attention in the market since its inception. EOS applied a new consensus algorithm to solve the problems of payment scale and speed, which are limitations of Ethereum. The consensus algorithm refers to the method of creating blocks. Bitcoin adopted the so-called proof-of-work (PoW) method, in which a computer (node) decrypts the password by randomly assigning numbers to create a new ledger and spreads it to the network, while Ethereum uses the so-called proof-of-work (PoW) method to solve the limitations of the proof-of-work method. To this end, we are exploring a transition to a proof-of-stake (PoS) method.

From the beginning, EOS adopted the DPOS (Delegated Proof of Stake) method, which gives voting rights to participants. First of all, the method of initial coin issuance (ICO) was unique. EOS issued initial coins for almost all of 2017 and raised about 700 million dollars (750 billion won). The total issuance of EOS is set at 1 billion, and 200 million, or 20% of the total issuance, were issued in the first 5 days after the ICO began. The rest were issued at a rate of 2 million per day, almost throughout the year. Another feature of EOS is that there are no fees [14].
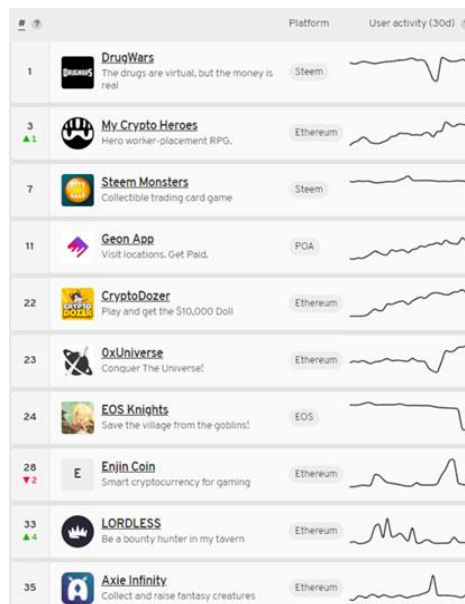
## 3. RESULTS



**Figure 3**. **State of the DApps game ranking[15]**

As of April 10, 2019, as a result of analyzing the game platforms in the top 100 in the game Dapp rankings on State Of The DApps, Dapp.com and Dapp Radar, the top game platforms in State Of The DApps are Ethereum, EOS, There were Steem, POA, etc., and there were 74 Ethereum-based games, 4 Steem-based games, and 17 EOS-based games. The top game platforms on dApp.com were Ethereum, EOS, Steem, TRON, etc. There were 67 Ethereum-based games, 3 Steam, and 11 EOS, and the top game platforms on Dapp Radar were Ethereum, EOS, and TRON, and there were 66 Ethereum-based games and 18 EOS. All three sites had significantly more games based on the Ethereum platform.

My Crypto Heroes is a mobile and PC HTML5 game based on the Ethereum platform using blockchain technology and is an idle RPG genre. This is a game where you conquer the world by raising heroes through collection and training. Players must become excavators, battle in the depths of the crypto world, and restore heroes to their best form. You compete with other players by collecting and strengthening heroes through

battle and trading. The core value of this game is that you can acquire or trade blockchain assets through gameplay and PVP between users, and that you can create the value of the assets yourself through editing.

Steam Monster is a TCG game based on the Steem blockchain platform. It is a game where you build a deck according to a set mana cost and play one-on-one. Since the battle progresses automatically, deck building determines victory or defeat. The order is to first select a summoner, and then select a monster according to the cost. A total of 7 elements are engraved on the card: mana cost, stats, rare attribute, name, level, experience point, and ability. There are two types of battles: practice matches and ranking matches.

EOS Knights is a dungeon RPG based on the EOS platform. Players can play as three warriors, a warrior, an archer, and a wizard, by purchasing them with a small amount of EOS. As a game with the name 'idle-type', there is nothing for the player to do. You can collect materials to make items, or purchase items sold by other players to increase your attack power/defense/health/luck, etc. The higher these numbers are, the deeper you can go into underground dungeons and the more valuable item crafting materials you can obtain. When you go down to a certain level and depth, you can escape from the neglected state and infiltrate another 'dungeon' where you directly activate skills like a 'turn-based RPG' game [23]. At the beginning of its launch, it gained popularity as it was said that 'you can earn cryptocurrency worth about a cup of coffee a day' [24].

## 3.1 Blockchain Game Platform Trends

The reason why there are so many Ethereum games among the Ethereum, EOS, and Steam public blockchain platforms is that it ranked 3rd in the overall score of the public blockchain and virtual currency technology evaluation rankings announced by the China Electronics and Information Industry Development Institute (CCID) in February 2019. Despite this, Ethereum ranked first in applicability and originality, and despite the emergence of new platforms such as EOS and Quantum, Ethereum has established itself most stably in the blockchain market, although its performance is somewhat inferior. .

Another reason is that there are many successfully commercialized DApps, such as Ethereum-based games CryptoKitties and Etheremon. The fact that there are many success cases means that it has been proven in the market, and although it is currently shaken by late-stage platforms with better performance, the expectation that the problem will be solved when a new version of Ethereum is released cannot be ignored [25].

Additionally, because the Ethereum blockchain dominates the market in terms of the number of DApps, wallets, and DApp users[26], Ethereum-based games were able to dominate the blockchain game market.

## 4. CONCLUSION

This paper is a study on blockchain game platform trend analysis to determine the proportion of the current AI blockchain game platform. Among the top 100 games on the DApp site State Of The DApps, Dapp.com, and Dapp Radar, the top blockchain games mainly used three public blockchain platforms: Ethereum, Steam, and EOS, and among them, Ethereum-based games were the most popular. There were far more.

From the perspective of DApp developers, the Ethereum platform is easy to apply, stable, and has a large number of DApps, wallets, and DApp users compared to other platforms, so users can see that the barrier to entry is low.

This study had limitations in that the criteria for selecting DApp sites were not specified and the criteria for ranking the three sites were not clear.

Currently, blockchain is being applied in various fields such as gaming, social, medical, energy industry, and finance, so blockchain industry integration is becoming more active. This is a time when a lot of research is needed so that successful cases of introducing blockchain technology can be found in various fields.

We plan to improve awareness of blockchain games by studying the characteristics that only blockchain

games have.

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