Shard-based blockchain into social media platforms

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In this era, social media platforms serve as valuable communication media to form interaction and social awareness within a community. The reliability of social media depends on the data being shared and the trustworthiness of the participants' behaviour. With the growing scale of network participants in social media, confronting the credibility of the platform was identified as a huge challenge where the trustworthiness of the content is the prime factor. Moreover, with the exponential growth of network participants, the probability of spreading misleading content is expected to increase. The decentralization approach of blockchain technology into social media will enhance the trustworthiness of the content. Therefore, current study focusses on proposing a shard-based blockchain framework for social media platforms. The adoption of blockchain technology into social media is intended to ensure data integrity and consistency. Sharding is a technique to split the entire blockchain network into smaller partitions thus resolving the scalability issues by gaining the highest transaction throughput. Therefore, the entire network of participants was partitioned into shards based on similar interests such as sports, education and cinema. The consensus mechanism is the core of blockchain technology. A desk review of existing consensus mechanisms was conducted to select the most appropriate consensus mechanism. Among the mainstream consensus mechanisms, Federated Byzantine Agreement (FBA) was selected as the most suitable consensus mechanism. Despite the high scalability, the inherent infrastructure of quorum and quorum slice of FBA was optimum for sharding techniques. In the proposed architecture, the endorsement of FBA leads the participants to form their own shards based on their interests and mitigate the scalability issues in the validation process. Thus, the proposed architecture allowed reliable content through the validation of the respective field of interest shards, and the scalability is achieved through the common interest of participants via quorum intersections of the FBA. Moreover, a reputation-based control mechanism is proposed to improve the content's reliability. Thus, the proposed framework is expected not only to solve scalability issues but also to enhance the security and privacy of social media. The proposed conceptual architecture aims to establish an ethical democratic and reliable social media network in future.

Keywords: Social media, Blockchain, Sharding techniques, Consensus mechanisms and federated byzantine agreement.

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