

A Value-Based Delegation Framework For Inclusive Community Representation

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Abstract. The governance process of many decentralized autonomous organizations (DAOs) relies on voting on self-executing proposals. In both on- and off-chain voting, token holders can delegate their voting power to other users, inspired by liquid democracy [1]. The aim of delegation is to mitigate voter apathy by allowing governance token holders to transfer their voting power to representatives endowed with trusted expertise while retaining possession of their tokens. However, previous work identified that only 1% of users vote frequently and only 15% of voting power is exercised [2, 3]. Moreover, current delegation user interfaces enhance voting power concentration, so that in several DAOs a few dozen voters hold decisive voting power over proposals, known as Nakamoto coefficient [4].

We propose a framework that systematically supports delegate selection to counteract contemporary elite-biased, oligarchic participation and increase the fraction of voting power reflected in decision-making by leveraging the advantages of liquid democracy. The framework consists of three key components and assists users in choosing delegates whose values and intentions align with their own, while continuously monitoring delegates' voting behavior. The first component extracts values for potential delegates based on publicly available information, such as historic votes and community forum posts, for which we favor the use of artificial intelligence (AI) tools like large language models (LLMs) and natural language processing (NLP). The second component is a delegate recommender system that assigns each potential delegate a score based on shared values, intentions and voting activity. Collaborative filtering is a promising building block for the recommender system. The third component monitors the actions of delegates and notifies delegators in case the observed behavior affects identified values or voting activity decreases. For each component, we want to identify core properties, explore the design space, and evaluate suitable approaches. Based on the findings, we want to measure the qualitative and quantitative delegation improvement in practice using a prototype-based field study.

Critical challenges for the framework are, in particular, ethical considerations when processing ideological data, a trustless design and ensuring incentive compatibility. Without the latter, the goal of inclusive community representation may be compromised, especially when introducing voting-related rewards or penalties, and each trusted or centralized component may undermine the user adoption in the first place, e.g., because of the risk of AI model poisoning due to a lack in transparency.

Keywords: DAO, governance, delegation, recommender system, liquid democracy

References

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