Collaborative Document Writing: Comparison of Several Approaches

Avital Finanser and Nimrod Talmon

A defining feature of many DAOs is their need for large-scale collaboration platforms that can accommodate their governance needs [1]: a popular envision is of a DAO whose members collaborate on different topics, from choosing internal governing bodies to jointly producing design documents and collaboratively writing text documents. Thus the need for tools that enable transparent and inclusive collaboration. Popular large-scale collaboration platforms -- e.g., Wikipedia, Google Docs, and Notion -- are either autocratic, with an owner that governs the collaboration process (e.g., a Google Docs document in which one agent can edit the document while all other agents merely suggest edits); or anarchic, where any agent can freely edit the document (e.g., a Google Docs document in which all agents have editing permissions).

While different collaboration tasks exist, here we focus on building the theoretical foundations for enabling democratic document writing. Scientifically, we build upon research in computational social choice, mechanism design, and tokenomics. Essentially, given an agent community, we wish to design systems through which agents of an agent community can interact to democratically produce a high-quality text document that reflects the different views and preferences of the community members.

Concretely, we compare several approaches to this task, whose essence we describe below:

(1) Using efficient techniques of aggregation over metric spaces [2], a metric space over text documents is defined and NLP techniques are applied to carefully aggregate agent ideal points within the metric space.

(2) Using iterative methods of voting over single sentences in the text, building upon preliminary work done by Consenz, a startup operating within the Cardano ecosystem [3], a collaborative text document is continuously updates according to consensus-based rules.

(3) Using a tree-based representation of the jointly-created document, building upon preliminary work done by Delib, a startup [4], the hierarchical structure of the text document is mutually being altered.

(4) Using a process of coalition formation, building upon preliminary work by Elkind et al. [5], groups of agents are being prompted to pairwise-deliberate towards a majority-supported document.

References

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