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Request for Information on the National Digital Twins R&D Strategic Plan

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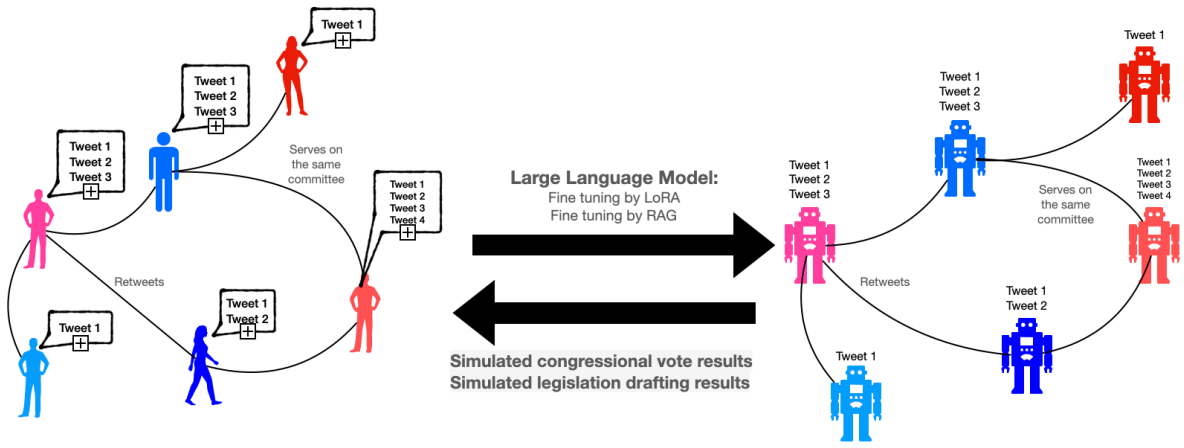
As with the promise of applications of digital twins for biomedical research, aerospace engineering, and earth systems, the recent cohort of generative models -- e.g., Large Language Models (LLMs) and diffusion models – have enabled progress towards a Digital Twin for Society. Insofar as an individual LLM is a proxy of an individual within a community, collections of LLMs can approximate entire communities. By properly modeling individuals within a community and defining appropriate interaction and update mechanics for subsets of the LLMs, we will soon be able to simulate political and social interventions at scale.

As a first step, we use tweets from congress people to train LLM to create digital twins for them. As illustrated below.

On the left side are the real congress people, forming a social network with edges between them. The edges can be undirected, such as indicating whether they serve on the same committee (0/1), or directed and weighted, such as representing how often A retweets B’s tweets, with the edge weight reflecting the number of retweets. On the right side are the digital twins of congress people, where large language models are fine-tuned using each congress person’s tweets. The digital twins serve as good approximations, demonstrated by their ability to predict real bill votes accurately. Additionally, these digital twins can simulate future bill votes, helping to identify weak points within a party, thereby having a real impact.



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