

Analysis of two charismatic persons at an election using opinion dynamics approach

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Recently, we present new opinion dynamics theory[1, 2] as an extension of the bounded confidence model. The characteristic of this new opinion dynamics theory is that the relationship between people and people has introduced trust and sluggishness in the trust relationship. We apply the theory to the election runs by two charismatic people.

We use the following equation of the new opinion dynamics theory[2] in this research.

$$\Delta I_i(t) = c_i A(t) \Delta t + \sum_{j=1}^N D_{ij} \Phi(I_i(t), I_j(t)) (I_j(t) - I_i(t)) \Delta t \quad (1)$$

where $\Phi(I_i, I_j) = \frac{1}{1 + \exp(\beta(|I_i - I_j| - b))}$.

Here, the agent's opinion at time t is $I_i(t)$ and D_{ij} and D_{ji} are independent. Usually, D_{ij} is an asymmetric matrix; $D_{ij} \neq D_{ji}$. $D_{ij} > 0$ means trust and $D_{ji} < 0$ means untrust.

We consider two charismatic persons at an election. Fig.1 shows an example calculated for 300 people using the new opinion dynamics theory of the paper. The mutual D_{ij} value between 300 people is decided by homogeneous random number between -1 and 1. We set two persons would be the charismatic persons. The calculation means people's opinions come to the opinions of two charismatic people.

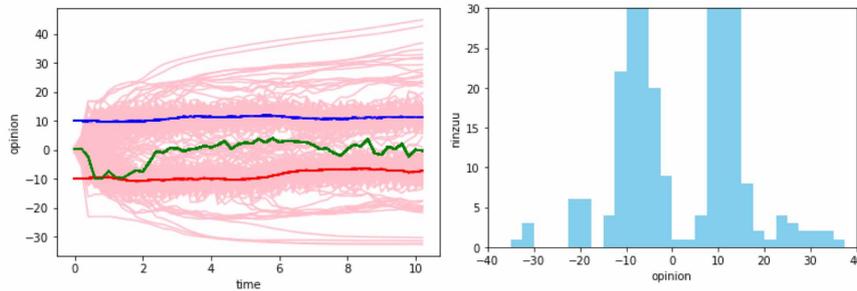


Figure 1: Simulation for $N=300$ with two charismatic persons. The coefficient D_{ij} from all people to the charisma is 5.0. The other coefficients are determined by random number between -1 to 1. The left means the trajectory of opinions of 300 people. The blue and red lines mean the trajectories of the two charismatic persons. The right is the opinion distribution.

References

- [1] Akira Ishii and Yasuko Kawahata, "Opinion Dynamics Theory for Analysis of Consensus Formation and Division of Opinion on the Internet", IES2018, 71-76
- [2] A. Ishii, "Opinion dynamics theory considering trust and suspicion in human relations" Proceeding of 19th International Conference on Group Decision and Negotiation in 2019 , Springer LNBIP proceedings, in press