PoSITeams - Positive Systems Intelligent Teams

an Agent-Based Simulator for Studying Group Behaviour

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Positivity

- Positive emotions: build cognitive, social, psychological, emotional and physical resources.
- increase the ability to cope with negativity
- can become a positive feedback loop towards emotional well-being
- High positivity ratios: increase the number of strong connections in the team

Future work

- Testing the simulator in a real-world organization.
- Validation of the emotional contagion model.
- Evaluate if SI can be improved in real life by PoSITeams.
- Further development of the simulator software.

The eight dimensions of systems intelligence.

![Figure 1](image1.png)

![Figure 2](image2.png)

![Figure 3](image3.png)

Adding a new team member

Improve personal behaviour

Emotional contagion

\[ P_j(t+1) = aP_j(t) + b + \sum_{i \neq j} I_{i,j} P_i(t) \]

\[ N_j(t+1) = cN_j(t) + d + \sum_{i \neq j} I_{i,j} N_i(t) \]

Influence functions

\[ I_{i,j}(P) = \gamma_j (1 - \beta_j (P_{i,j} - P_{i,j}^{\text{rel}})) \]

Relative positivity

\[ P_{rel}^j = 1 - N_j \]

Broaden-and-build extension

- Increases connectivity and ability to cope with negativity as P/N increases.

- \[ P_j, N_j \] level of positivity and negativity
- \[ P_j, N_j \] level of negativity bias
- \[ \gamma_j, \beta_j \] emotional contagion strength between agents \( j \) and \( i \), where
- \( \gamma_j \) how strongly the agent \( j \) expresses its level of emotion
- \( \beta_j \) social connection strength between agents \( j \) and \( i \)
- \( \delta_j \) how easily the emotions of agent \( j \) are affected by the emotions of others

References


