

Communication dynamics of a dyad interaction model with applications to human-automation teaming

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Communication is pivotal for the emergence of coordination and cooperation within teams. As a result, communication plays an important role in team dynamics as better communication between teammates can lead to more efficient and successful teams. To better understand communication dynamics and their impact on team performance, we develop a modelling framework of two-agent interaction dynamics in a discrete-time fashion. Our proposed model considers the communications between two agents based on each agent's personality and their individual impact on any received communication. Combined with data, we perform mathematical analysis and bifurcation diagrams to study how agents' personality and training may impact the quality of the team's communications and therefore their performance in task completion. The validations and parameter estimations of our model from data could potentially help us to select team members that could work together efficiently, and train members in the established team to collaborate better.

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