Agent's Cooperation Levels to Enhance Human-Robot Teaming

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Résumé

Effective cooperation between human operators and robots is essential for the accomplishment of crucial tasks in tough and dangerous contexts, such as search and rescue operations. While autonomous robots excel at moving through dangerous conditions, human decisions made on the basis of global knowledge and experience, are still required to adapt to unforeseen events. We used a Human-Machine Cooperation model to address this topic. The model proposes the definitions to analyze the Know-How-to-Operate and Know-How-to-Cooperate competencies of the teaming agents, in relation to the different phases of a shared task. On this basis, we designed four cooperation levels for the team with the addition of an intelligent assistant system (IAS) agent. As a proof-of-concept, the grid for cooperation model has been adapted for identifying the competencies of agents in a team composed of one human, one IAS, and two robots.

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