

May I guide you? – Context-Aware Embodied Cooperative Systems in Virtual Environments

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Keywords: Embodied cooperative systems; BDI; episodic memory; event-indexing model.

The objective of this PhD project is to improve the behavior and assistance of virtual humanoid agents by adding cognitive capabilities of awareness and memory of goals and executed actions. Our first scenario embraces a human discovering a virtual world (e.g., scenic places) in cooperation with an embodied agent having knowledge about the virtual world. The agent accumulates further knowledge from joint experiences (e.g., places visited, statements uttered) and tries to support the human in reaching joint goals (e.g., to visit as many scenic places as possible in a given time).

Our starting point, besides a feature rich virtual world, is an agent architecture building on the belief-desire-intention model (BDI) of rational behavior. We want to extend this cognitive architecture with an episodic memory, where a joint experience is conceptualized as an event in which a sequence of events forms an episode.

To be able to search through episodes and to compare events, we want to embed the event-indexing model of Zwaan, Langston, & Graesser (1995) into our current BDI architecture. This model describes how humans construct representations of situations in simple narratives. Thereby,

events are focal points of situations and are connected in memory along five dimensions: *time*, *space*, *causality*, *intentionality*, and *protagonist*. These dimensions store the answers to the questions of what happened when, where, why and how, and who was involved. To round off the memory we want to combine the event-indexing model with a computer-implemented approach by Tecuci & Porter (2007) conceptualizing a generic episode in three dimensions: *context*, *contents*, and *outcome*. Context is the general setting in which an episode happened, contents is the ordered set of events, that make up the episode, and outcome is an evaluation of the episode's effect.

This project is supported by the Cognitive Interaction Technology Excellence Center (CITEC).

References

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