REAL-TIME DYNAMIC PARTIAL ORDER PLANNING FOR MEMORY RECONSTRUCTION IN AUTONOMOUS VIRTUAL AGENTS

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Abstract

We introduce a novel approach to generate narratives from the memories of in-game agents. We propose an agent framework to accommodate memory and perception in virtual agents. This system extracts agent auto-biographic memories as multiple partial narratives, and generates possible complete narratives. We employ a novel narrative merging and extrapolation technique to generate unique complete narratives based on partial narratives of multiple agents. This is used to generate unique narratives for specific narrative constraints. To generate narratives for massive open-world scenes we introduce a novel algorithm that generates dynamic partial plans of large action spaces in real-time. These plans repairs as per the user actions, thereby generating a unique narrative for every different user interaction. We conducted a comparative study of our dynamic planning technique with existing planning techniques. Also, we tested our agent framework for a complex environment to verify its robustness.

Defense Committee: Prof. Mubbasir Kapadia (Chair), Prof. Kostas Bekris, Prof. Alex Borgida