ON TEMPORAL ANALYSIS OF TIMED INFLUENCE NETS USING POINT
GRAPHS*

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ABSTRACT

This paper demonstrates the use of Point Graphs (PG) and temporal logic for analyzing courses of action (COA) in a Timed Influence Net (TIN) that models a dynamic uncertain situation. The current practice in courses of action analysis looks at the impacts of actions on the likelihood of the desired effects over a period of time. The impact of time, however, is not studied explicitly. This paper presents an algorithm that generates a corresponding Point Graph for a Timed Influence Net. This graph-based knowledge representation and reasoning formalism is shown to help reveal temporal behavior of the modeled system. A temporal language is also shown to interact with the graphical representation. An analysis on the graph addresses user-defined ‘what-if’ scenarios for a better understanding of the temporal relationships between certain actions that may result in a desired effect at a particular time instant.

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