

## Introduction to the 1997 HICSS MiniTrack on Logic Modeling\*

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Six papers appear in this year's minitrack on logic modeling, comprising two sessions of three papers each.<sup>1</sup> These papers cover a range of issues and methodologies, from the descriptive and empirical to the formal and mathematical.

In the first session, the initial paper is by F. Dignum and R. Kuiper and is entitled "Combining Dynamic Deontic Logic and Temporal Logic for the Specification of Deadlines." Combining logical operators is a subtle problem, yet one that needs to be addressed for purposes of electronic commerce. This paper essays to explore how to combine two of the most important kinds of logical operators for electronic commerce.

The second paper in the first session is by Hong-Gee Kim and is entitled "Formalizing Perspectival Defeasible Reasoning." Defeasible, or non-monotonic, reasoning has been a mainstay topic of the logic modeling minitrack at HICSS, and rightly so. Important progress has been made on this essential topic and much of that progress was first published in the HICSS minitrack on logic modeling. Kim's paper presents and develops a graphical representation for a theory of defeasible reasoning, which theory is motivated by a psychologically plausible cognitive theory.

The third paper in the first session is "Towards a Logic Model for Object-Oriented Systems Analysis and Design," by Steve Kimbrough and Bill Vachula. This paper extends their work, presented in last year's logic modeling minitrack, on developing and implementing logic-based representations and inferential regimes for systems analysis and design diagrams. Kimbrough and

Vachula make the case that logical representation of systems analysis diagrams will permit many inferences to be made that will support the implementation and validation of information systems.

Our second session begins with "d-Graph: An Argument-Based System Incorporating Defeasible Graphs," by Donald Nute, Christopher Henderson, and Zachary Hunter. This paper extends work by Hua and Kimbrough, originally reported at HICSS, on developing DSSs that support the presentation and clarification of arguments and that use defeasible reasoning in doing so. Nute, Henderson, and Hunter base their argumentation DSS on Nute's defeasible logic, which has also been presented extensively at HICSS. Their system presents users with graphical representations of arguments using defeasible reasoning. This is one of the most promising avenues for near-term application of defeasible reasoning and represents an important advance in DSS technology.

The second paper in our second session is "Action Concepts for Describing Organised Interaction," by Santos, Jones, and Carmo. We have nominated it as the best paper in the minitrack. The paper explores applications of modal logic to the formal specification, or characterization, of organizations. As such, it is an interesting paper from an organizational behavior perspective, as well as from the point of view of formal logic. We can expect to see a continuing stream of dividends from action theory and formal logic applied to modeling organizations.

The third paper in our second session is "A Modal Logic for Reasoning about Belief," by Zhang, Rounds and Huang. This paper takes a model-theoretic perspective on reasoning about belief. In doing so it represents a growing body of logical research taking a semantic, rather than proof-theoretic, approach to logic modeling. This paper spans interests in modal logic, defeasible reasoning, and action theory. It integrates many of the themes in this year's minitrack.

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<sup>1</sup>Two other HICSS 1997 papers we are aware of are worth noting in the context of logic modeling. First, "Defeasible Dependencies for Relational Database Design," by W.D. Potter, was submitted to, and accepted by, the logic modeling minitrack, but moved for reasons of scheduling to another minitrack. Second, "Relativized Deontic Modalities: An Aspect of Formal Business Communication," by Young U. Ryu was submitted to, was accepted by, and will appear in the electronic commerce minitrack.