Seventh Workshop on the Validation and Verification of Knowledge-Based Systems

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The annual Workshop on the Validation and Verification of Knowledge-Based Systems is the leading forum for presenting research on the validation and verification of knowledge-based systems (KBSs). The 1994 workshop was significant in that there was a definitive move in the philosophical position of the workshop from a testing- and tool-based approach to KBS evaluation to that of a formal specification-based approach. The 1994 workshop included 12 full papers and 5 short papers and was attended by 35 researchers from government, industry, and academia. The full papers of the workshop were presented in three sessions: (1) formal methods and techniques for validation and verification, (2) techniques and practices, and (3) tools and practices.

The first session aimed to set the stage for the day’s discussion by focusing on the issues surrounding the use of formal specification techniques in the development and evaluation of KBSs. The first paper, by Lance Miller of SAIC, was entitled “A Formally Based Methodology for Deriving Verifiable Expert Systems” and was entitled "A Formally Based Methodology for Designing Verifiable Hybrid KBSs" by Rose Gamble, Donna Baughman, and A. Murphy (all from the University of Tulsa) and “A Formally Based Methodology for Deriving Verifiable Expert Systems from Specifications” by Anca Vermeesch and Tor H. Wergeland (both from the Foundation for Research in Economics and Business Administration, Bergan, Norway) focused on the use of formal specifications and formal verification methods. Further, Miller discusses guidelines that reflect (1) the stage of development and the most effective validation and verification procedures for the stage, (2) the stringency of validation and verification that is judged to be needed, and (3) the type of system component being tested. The variation in all three of these contexts will lead to different types of recommended practice.

The second and third papers, “Using Formal Specifications to Design Verifiable Hybrid KBSs” by Rose Gamble, Donna Baughman, and A. Murphy (all from the University of Tulsa) and “A Formally Based Methodology for Deriving Verifiable Expert Systems from Specifications” by Anca Vermeesch and Tor H. Wergeland (both from the Foundation for Research in Economics and Business Administration, Bergan, Norway) focused on the use of Z and LARCH, respectively, in their specification-oriented approaches to KBS development. Gamble and her colleagues illustrated a methodology for the creation of hybrid KBSs from formal specifications and showed initial research into the creation of a computer-aided software-engineering tool to support this approach. Vermeesch also presented a formal methodology that focused on two issues: (1) the formal verification of KBSs, showing that the expert system is consistent with its specification, and (2) the redefinition of formal specifications for their implementation.

The final three papers in this sec-

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