**Fusion, Propagation, and Structuring in Belief Networks**

**Judea Pearl**

Cognitive Systems Laboratory, Computer Science Department,

University of California. Los Angeles, CA 90024, U.S.A

Recommended by Patrick Hayes

ABSTRACT

Belief networks are directed acyclic graphs in which the nodes represent propositions (or variables), the arcs signify direct dependences between the linked propositions, and the strengths of these dependencies are quantified by conditional probabilities. A network of this sort can be used to represent the generic knowledge of a domain expert, and it turns into a computational architecture if the links are used not merely for storing factual knowledge but also for directing and activating the data flow in the computations which manipulate this knowledge.

The first part of the paper deals with the task of fusing and propagating the impacts of new information through the networks in such