An Information Theoretic Approach to Rule-Based Connectionist Expert Systems

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Abstract: We discuss in this paper architectures for executing probabilistic rule-bases in a par(cid:173) allel manner, using as a theoretical basis recently introduced information-theoretic models. We will begin by describing our (non-neural) learning algorithm and theory of quantitative rule modelling, followed by a discussion on the exact nature of two particular models. Finally we work through an example of our approach, going from database to rules to inference network, and compare the network's performance with the theoretical limits for specific problems.