Improved Trust Prediction in Business Environments by Adaptive Neuro Fuzzy Inference Systems

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Abstract—Trust prediction turns out to be an important challenge when cooperation among intelligent agents with an impression of trust in their mind, is investigated. In other words, predicting trust values for future time slots help partners to identify the probability of continuing a relationship. Another important case to be considered is the context of trust, i.e. the services and business commitments for which a relationship is defined. Hence, intelligent agents should focus on improving trust to provide a stable and confident context. Modelling of trust between collaborating parties seems to be an important component of the business intelligence strategy. In this regard, a set of metrics have been considered by which the value of confidence level for predicted trust values has been estimated. These metrics are maturity, distance and density (MD2). Prediction of trust for future mutual relationships among agents is a problem that is addressed in this study. We introduce a simulation-based model which utilizes linguistic variables to create various scenarios. Then, future trust values among agents are predicted by the concept of adaptive neuro-fuzzy inference system (ANFIS). Mean absolute percentage errors (MAPEs) resulted from ANFIS are compared with confidence levels which are determined by applying MD2. Results determine the efficiency of MD2 for forecasting trust values. This is the first study that utilizes the concept of MD2 for improvement of business trust prediction.

Keywords—key words Trust prediction; Adaptive neuro-fuzzy inference system (ANFIS); Maturity, distance and density (MD^2)

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