

Development of Autonomous Multi Agent System for Multi-Hazard Risk Assessment

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Developing autonomous multi agent systems are to be considered an advancement of multi agent systems can be applied in both the physical and the logical world. Constructions of multi hazard risk assessment using spatial data for disaster management have a problem of effective communication because of implicit knowledge. Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized hazard. Multi hazard risk assessment requires commonsense knowledge related with the hazard. This complicates the effective communication of data to the user in real-time machine processing in support of disaster management. The aim of the approach is to identify the influences of developing autonomous multi agent systems for risk assessment in disaster management. The objectives should a) contribute to a better understanding of the transformation processes in commonsense knowledge related with a hazard and b) provide effective communication of data to the user in real-time machine processing in support of disaster management. In this paper we present a methodology to modeling commonsense knowledge in Multi hazard risk assessment using Autonomous multi agent system. This gives three-phase knowledge modeling approach for modeling commonsense knowledge in, which enables holistic approach for disaster management. At the initial stage autonomous agents are initialized to convert commonsense knowledge based on multi hazards into a questionnaire. Removing dependencies among the questions are modeled using principal component analysis. Classification of the knowledge is processed through fuzzy logic agent, which is constructed on the basis of principal components. Further explanations for classified knowledge are derived by agent based on expert system technology. We have implemented the system using *FLEX* expert system shell, *SPSS*, *XML* and *VB*. This paper describes one such approach using classification of human constituents in Ayurvedic medicine. Evaluation of the system has shown 77% accuracy.

Key words: *Autonomous multi agent systems, Multi hazards, risk assessment, commonsense knowledge, Fuzzy logic*