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Using an Adaptive Neuro-Fuzzy Inference System in the development of a real-time expert system for flood forecasting

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In order to develop a real-time expert system for flood forecasting, an adaptive neuro-fuzzy inference system (ANFIS) that facilitates learning from data is proposed. By applying ANFIS to observed data such as water level and rainfall at forecast points of interest, ANFIS was shown to be a powerful candidate for automatic rule extraction. These rules were incorporated into a knowledge-based expert system. In order to provide a qualitative flood forecast, a set of pre-defined thresholds of water level were used to warn the public. This system was further encapsulated in a real-time expert system shell known as COGSYS KBS. COGSYS KBS is a knowledge based system which is sufficient to deal with a wide variety of applications.