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# A Hybrid Expert System for Generating Stock Trading Signals

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**Abstract :** In this paper, a hybrid expert system is developed by using fuzzy genetic network programming with reinforcement learning (GNP-RL). In this system, the frame-based structure of the system uses the trading rules extracted by GNP. These rules are extracted by using technical indices of the stock prices in the training time period. For developing this system, we applied fuzzy node transition and decision making in both processing and judgment nodes of GNP-RL. Consequently, using these method not only did increase the accuracy of node transition and decision making in GNP's nodes, but also extended the GNP's binary signals to ternary trading signals. In the other words, in our proposed Fuzzy GNP-RL model, a No Trade signal is added to conventional Buy or Sell signals. Finally, the obtained rules are used in a frame-based system implemented in Kappa-PC software. This developed trading system has been used to generate trading signals for ten companies listed in Tehran Stock Exchange (TSE). The simulation results in the testing time period shows that the developed system has more favorable performance in comparison with the Buy and Hold strategy.

**Keywords :** fuzzy genetic network programming, hybrid expert system, technical trading signal, Tehran stock exchange
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