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# A League Championship Algorithm Equipped with Network Structure and Backward Q-learning for Extracting Stock Trading Rules

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## highlights

- A league championship algorithm is heavily adapted to extract stock trading rules
- A network structure representation scheme and a backward Q-learning is developed
- Each individual learns from strengths/weakness of others to extract better rules
- An average matching degree approach is introduced to create trinary signals
- The hybrid method shows a very good performance specially for sharp price uptrends

## Abstract

Buying and selling stocks are the main activities of investment in the financial markets. During several years, financial experts have designed various indices and indicators to develop intelligent methods to decide whether buy or sell or no trade a specific stock. In this paper, the league championship algorithm (LCA) is adapted and equipped with a network structure (which provides the implicit memory function, compact structure and gives the ability of reusing nodes) for stock trading rule extraction process. The proposed algorithm is able to extract and save various stock trading rules for various kinds of stock market conditions. Each individual in LCA makes role as a sport team which could learn from weaknesses and strengths of others to enhance its

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