Stock Market Analysis Based on Complex Network theory and Deep Learning Methods

Background: Since stock market plays a critical role in resource allocation and risk transmission, a deeper understanding of the evolution of interdependencies is essential for maintaining market stability. However, due to the high-noise, dynamic, nonlinear and chaotic nature of stock markets, the effectiveness of traditional statistical methods remains limited. Therefore, my research focuses on stock market analysis based on complex network theory and deep learning methods.

Methods: Multilayer network; Convolutional neural network; Graph neural network; Deep reinforcement learning

Applications: Market structure analysis; Market forecasting; Portfolio management; Risk management

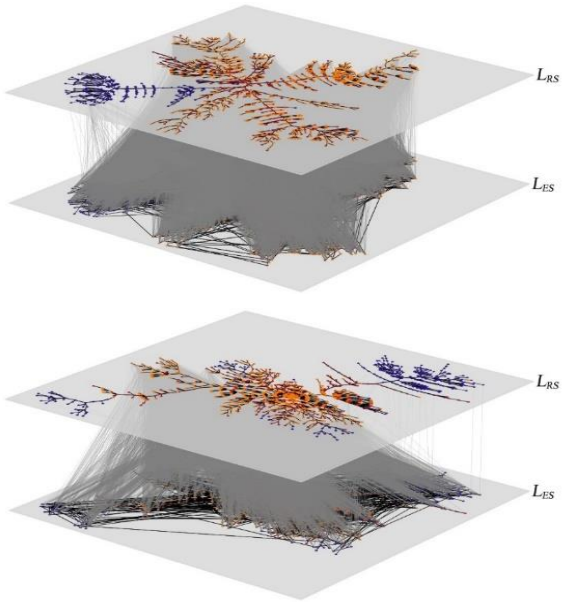

Fig. 1. The multilayer network structure of stock markets in different periods

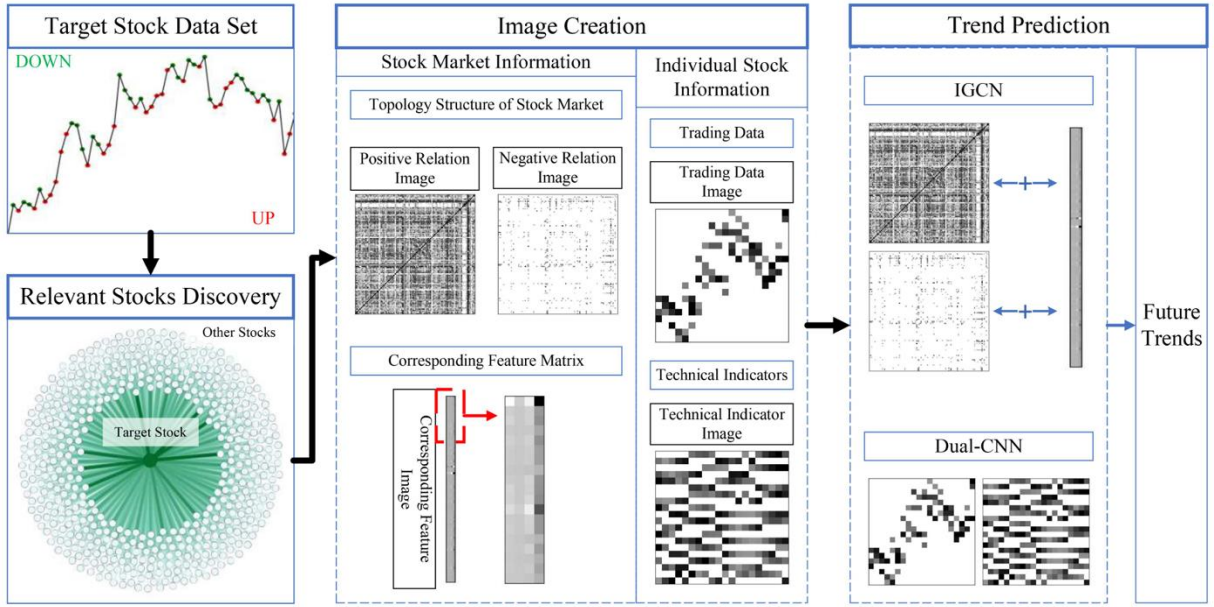

Fig. 2. Graph convolutional feature based convolutional neural network for stock trend prediction

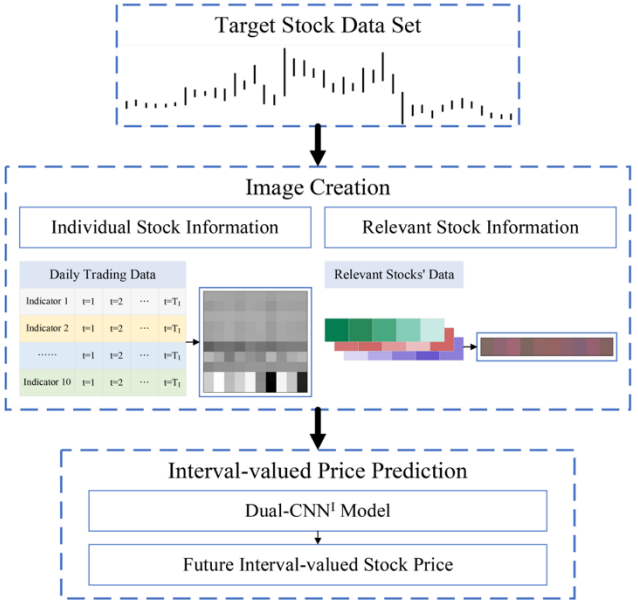

Fig. 3. Dual-CNN^{I} based method for interval-valued stock price prediction