

## Business and Psychological Principles Integrated into Automated Capital Investment Systems through Mathematical Algorithms

**Authors :** Cristian Pauna

**Abstract :** With few steps away from the 2020, investments in financial markets is a common activity nowadays. In the electronic trading environment, the automated investment software has become a major part in the business intelligence system of any modern financial company. The investment decisions are assisted and/or made automatically by computers using mathematical algorithms today. The complexity of these algorithms requires computer assistance in the investment process. This paper will present several investment strategies that can be automated with algorithmic trading for Deutscher Aktienindex DAX30. It was found that, based on several price action mathematical models used for high-frequency trading some investment strategies can be optimized and improved for automated investments with good results. This paper will present the way to automate these investment decisions. Automated signals will be built using all of these strategies. Three major types of investment strategies were found in this study. The types are separated by the target length and by the exit strategy used. The exit decisions will be also automated and the paper will present the specificity for each investment type. A comparative study will be also included in this paper in order to reveal the differences between strategies. Based on these results, the profit and the capital exposure will be compared and analyzed in order to qualify the investment methodologies presented and to compare them with any other investment system. As conclusion, some major investment strategies will be revealed and compared in order to be considered for inclusion in any automated investment system.

**Keywords :** Algorithmic trading, automated investment systems, limit conditions, trading principles, trading strategies

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