The Finite State Trading Game: Developing a Serious Game to teach the Application of Finite State Machines in a Stock Trading Scenario

Abstract:
In this paper a new methodology to teach the topic Finite State Machines to upper vocational school students is proposed. A Serious Game solution was created consisting of nine learning objectives split into categories about the basics of Finite State Machines, the parallels between Finite State Machines and stock trading and the application of Finite State Machines in order to construct Artificial Intelligence. This paper focuses on the existing parallels between Finite State Machines and the concepts of automated stock trading. The learning objectives were determined using Bloom's Taxonomy and implemented into the Serious Game "The Finite State Trading Game" (FSTG). In this turn-based trading game, the user strives to beat a Non-Player Character by skillfully trading shares at various difficulty levels. In order to evaluate the Serious Game approach, a pre-test and post-test situation was performed.
with students of a local upper vocational school class at the Technical University of Munich. The analysis of the results showed major improvements of the students’ knowledge about Finite State Machines for every tested statement. Given the success of this test setting, FSTG appears to be a promising solution to be used to support or even substitute traditional ways of teaching.

Stichworte: Serious Game · Finite State Machine · stock trading · Bloom taxonomy for learning objectives

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