

The aim of this thesis was to design a mathematical formalism that allows describing and exploring the properties of board games. The work benefits from the findings of automata theory and logic programming.

The first part of the thesis deals with finite automata and their possible applications for the needs of board games. The result is an extension of finite-state automaton covering the specifics of board games called game automaton.

Board games are a complex domain; high-level tools should be used. Such a tool is a logical programming. Using logic programming, a declarative description instrument was designed that allows declarative descriptions of games, named gaming system. This declarative description is used as a framework for the implementation of interactive games.

Linking the two worlds will be demonstrated by conversion of the gaming system to the game automaton.