

Playing God: The Engineering of Functional Designs in the Game of Life

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Introduction

Conway's Game of Life is a set of rules in a two dimensional cellular automata grid. This ruleset was specifically chosen by John Conway for the ability to create stable patterns as well as the difficulty of creating patterns which grow without bound. This difficulty was rather quickly overcome by Bill Gosper's glider gun, which opened up the ability to create binary computational devices such as logic gates. As soon as the possibility of binary computational devices in the Game of Life was discovered, it was realized that patterns could be designed in the Game of Life which could symbolically carry out computations. This project endeavors to facilitate in the design and creation of functional patterns in the Game of Life.

Abstract

First, this project endeavours to create a flexible and powerful Game of Life interface. After that is achieved, this project goes on to create search programs for patterns in the Game of Life. Finally, this project intends to use the functionality enabled by the previous two steps to design a pattern which can be used for computation in the Game of Life. That is, the purpose of this project is to create one or more patterns in the game of life which take an input in the game of life and consistently produce an output which can be interpreted to get the right answer.

Procedures

The procedure followed in this project was to first create the programs necessary for the design and creation of functional programs in the Game of Life, and then to use these programs to actually create such a pattern.

Conclusions

Conclusions forthcoming

