Problem Statement and Goals
Game of continuous life

Baptiste Pignier

01/19/2025

1 Problem Statement

This software is a continuous version of the Conway's Game of Life. Space, time and rules are made continuous to explore more emerging phenomena. This simulation allows the observation of cellular automata and their macroscopic evolutions, in a world governed by microscopic rules.

1.1 Problem

Make space, time and rules continuous is a difficult challenge and many extensions are possibles. The problem is to define the framework of the simulation and to highlight its limits.

1.2 Inputs and Outputs

The inputs are many numerical parameters that define how the simulation's evolutions. Each parameter is set before the simulation and their values define the rules of the simulation. The output is a succession of environmental state in which we can appreciate the successive applications of the rules of evolutions.

1.3 Stakeholders

1.4 Environment

The software requires a large amount of hardware resources to calculate the successive applications of the rules as well as the display of the result. The display of the result will be delegated to optimized graphics libraries. Thus, the graphics implementation is not part of the software design.

2 Goals

3 Stretch Goals

4 Challenge Level and Extras

Expected difficulty level is general and intermediate. I have knowledge on the subject of simulation design in general but little on the physical and mathematical aspect of the algorithms that I will implement.

The simulation will be designed to be modular. Thus, extensions can be easily added to complicate the evolution rules.