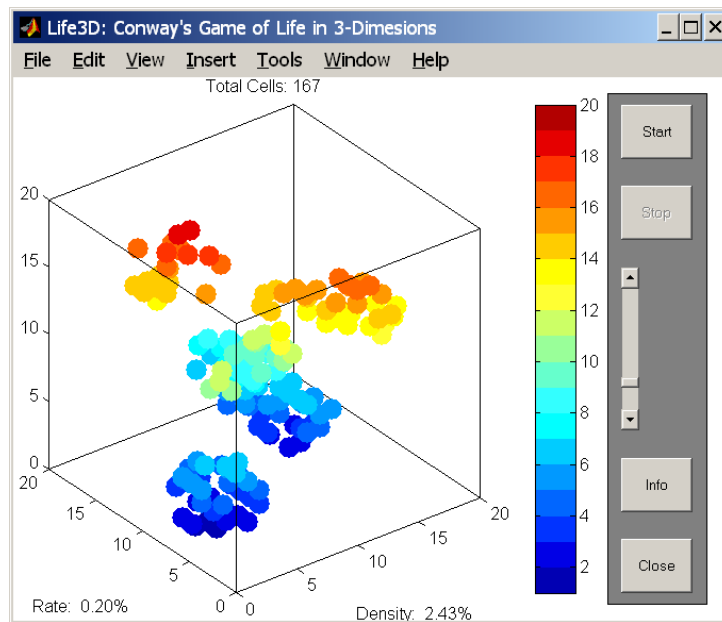


Project proposal for Game Of Life 3D, EDA385

Simon Kämpe, dt06sk4
Johannes Jakobsson, dt06jj0
Bereket Gichamo, kurs07bgi

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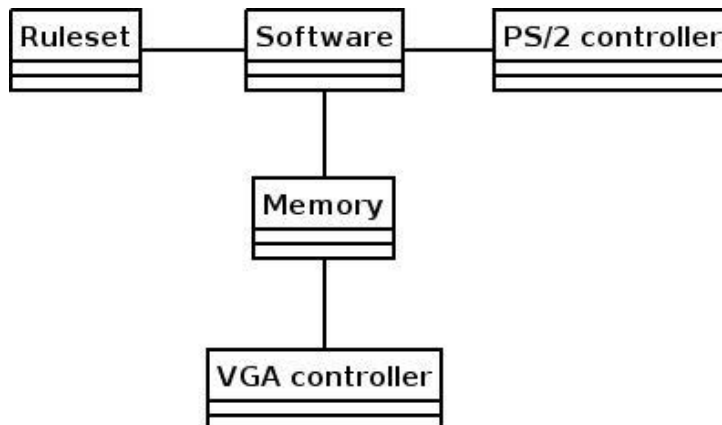
1 Description



Figur 1: Game of life

We will try to implement the Game Of Life in 3D using the Spartan 3E board, a VGA controller and an PS/2 keyboard. The Game Of Life is an simple simulation that shows how cells will live and die depending on their neighbouring cells.

2 Components



Figur 2: Components

2.1 VGA

We will implement our own VGA controller in VHDL that will be tightly connected to the calculation of the cell-matrix. The matrix will be calculated in software and then saved on the BRAM that the VGA will then read and display. The VGA calculates the image from the BRAM to create the 3D effect. The data in the BRAM is simply the $32 \times 32 \times 32$ matrix represented in binary form, to save space. By

letting the VGA read directly from the memory we will save bandwidth on the bus. The resolution will be 640x480, the frequency in 60Hz and a color depth of 8 bits.

2.2 PS/2

A PS/2 keyboard will be used to send input to the program. The input will consist of choosing which cell that will live from the start of the simulation, and also change the camera angle (if we have the time).

2.3 Software

The software controls the interrupts sent by the keyboard, are responsible for calculating which cell lives or dies and sends the result to the BRAM.

2.4 Ruleset

The ruleset is the rules that decides if a cell lives or dies. The rules are defined by two variables, $r1$ and $r2$. If the sum of the living neighbouring cells exceeds $r2$ or are lower than $r1$ the cell dies (from overpopulation or starvation). If the sum is larger than or equal to $r1$ and lower than $r2$ a living cell survives. If a dead cell is neighboured by *exactly* $r2$ living cells the cell will have a new life. The size of the board will be $32*32*32$ cells.

3 Time Schedule

V.2 Proposal presentation.

V.3 Final proposal and implementation.

V.4 Implementation of VGA, PS/2 and the software.

V.5 Same from last week.

V.6 Testing and integration.

V.7 Final testing and presentation.