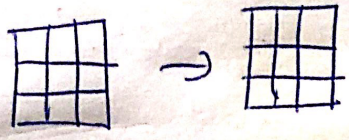
Submitted By :
Date: May 10, 2020
Group # 1
Artificial Life

Cüneyt Erem : s6cuerem@uni-bonn.de
Stephen Abikoye, s6stabik@uni-bonn.de
Karim Baidar, s6kabaid@uni-bonn.de

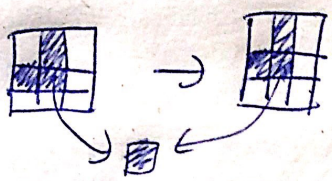
$\Sigma = 11$

8] _ It is legal, silent state and symmetric

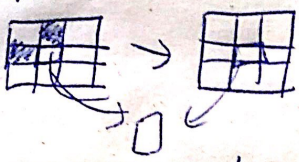


_ it is not peripheral because different colors with same neighbors does not result in same color

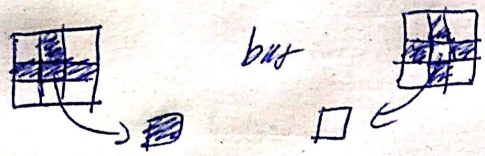
(1)



but



_ it is not deterministic because sum of same cell states does not produce same color

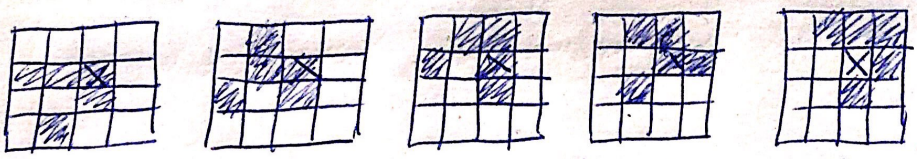


but have different color

9] The existing of Gosper's Glider Gun proved that finite number of specific pattern can produce infinite number of cells that Conway's Game of Life can be considered as Turing Machine.

(1)

10] Gosper's Glider gun can produce glider as 5-cell configuration.



(3)

In total, we have 4 different types of gliders that can produce themselves in a different position. For each of them, they can depict 4 different steps so that we have 4×4=16 different configurations.

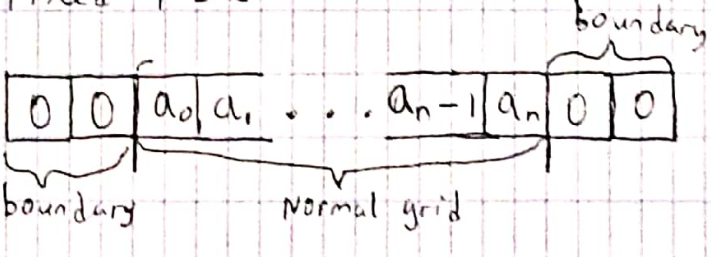
11.) Application of Cellular Automata:
→ Temperature Field simulation in cutting process Based on Cellular Automaton. (Xinqin Cao. The Cellular Automata Studying of Complex System. Huazhong University of Science and Technology, 2006). (1)

not we want

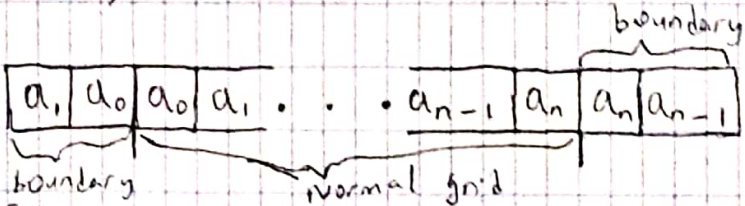
12.) The R-pentomino belongs to the class of patterns called: Methuselahs, which are patterns which start off small but take a very long time to become periodic and ~~predicte~~ predictable. The R-pentomino ~~did~~ does not evolve into a stable pattern after a few ~~iterations~~ iterations, it doesn't stabilize until generation 1103. (1)

13.) Draw pictures, that visualize the methods of fixed Boundary & Mirroring boundary for $d = 1$, $K > 2$, $r = 2$ and $r = 3$, Cellular Automata.

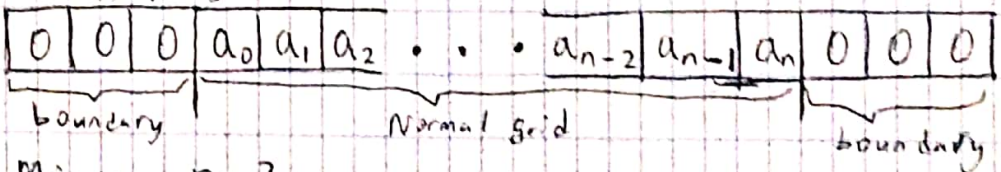
Fixed $r = 2$



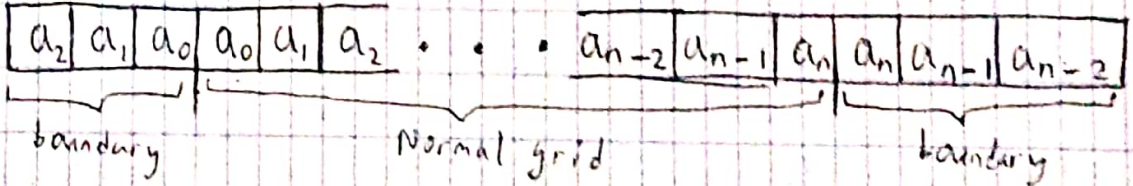
Mirror, $r = 2$ (2)



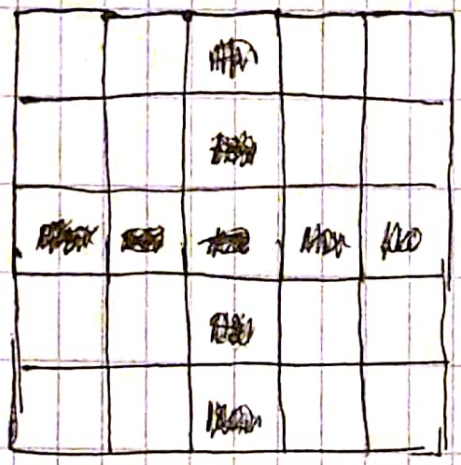
Fixed, $r = 3$



Mirror, $r = 3$



14)



(2)

This pattern will die out in a single Update.