

AGH



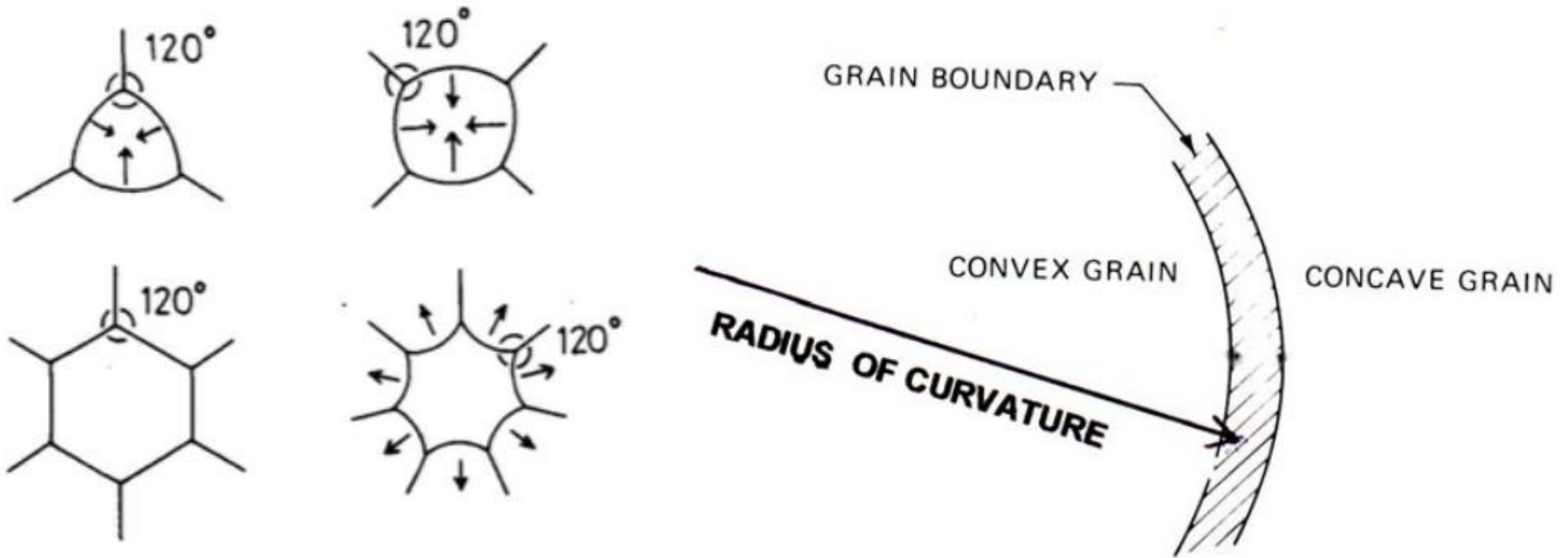
Multiscale Modeling

Classes Schedule

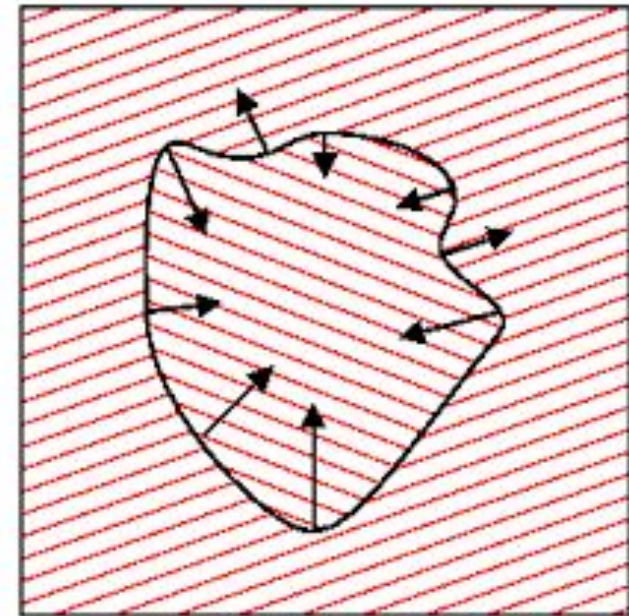
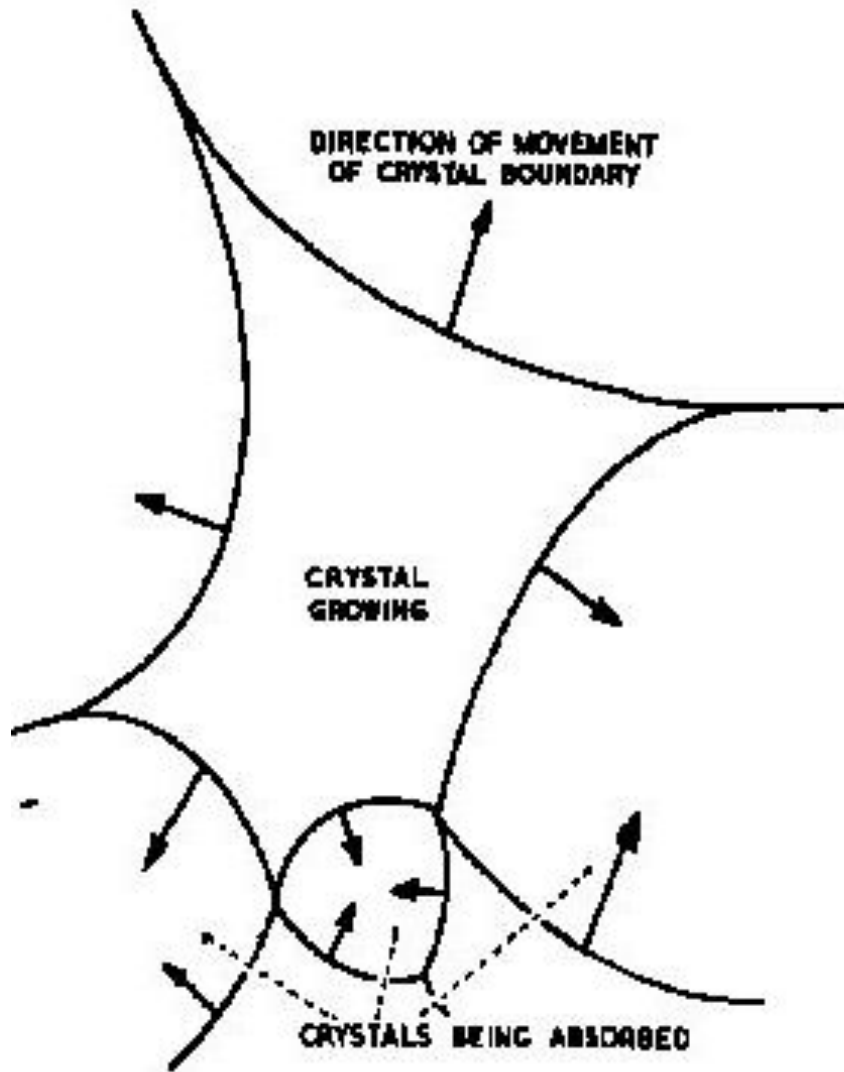


1. Kickoff meeting. Introduction. Simple Grain Growth Cellular Automaton
2. Inclusions, precipitations feature
3. **Consideration of grain curvature**
4. Substructures
5. Boundaries detection
6. Leftovers, project submitting

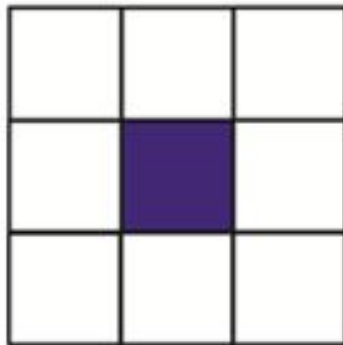
Grain Curvature



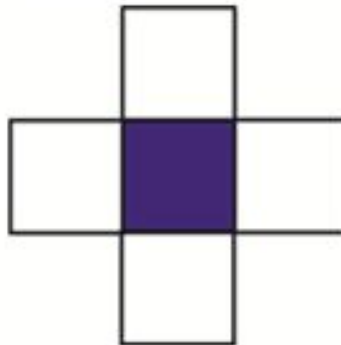
Grain Curvature



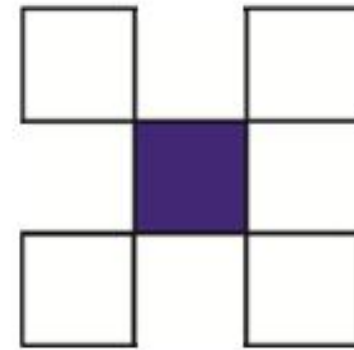
Moore



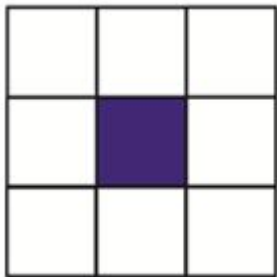
Nearest Moore



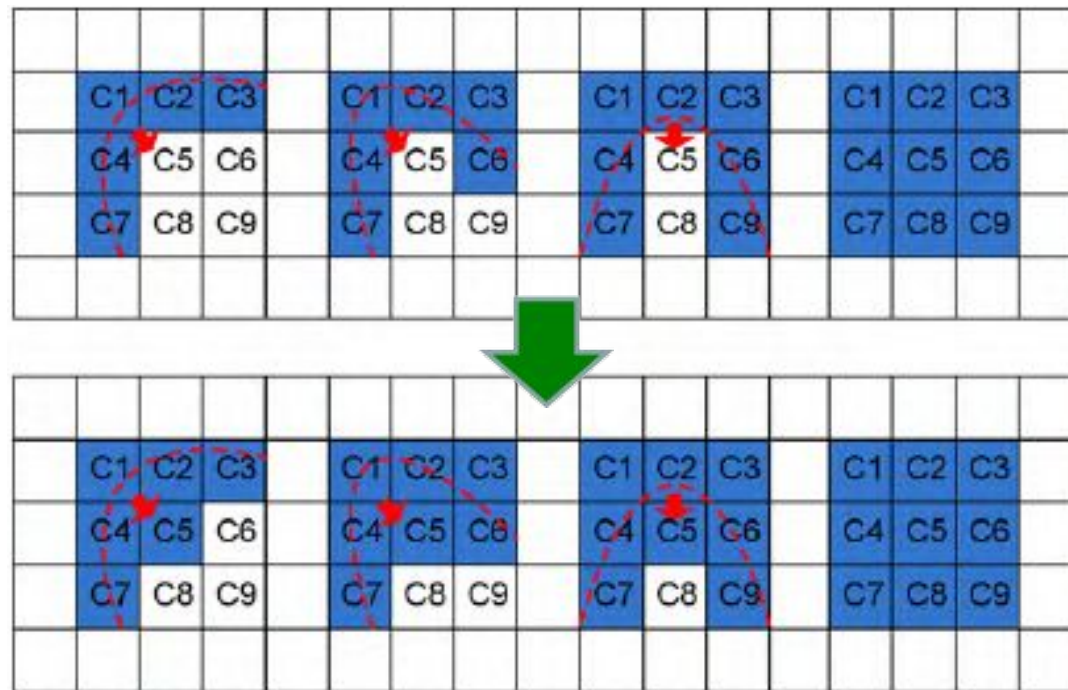
Further Moore



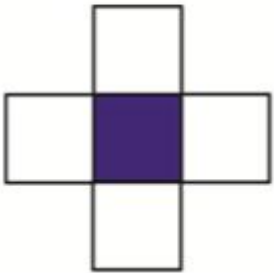
Rule 1



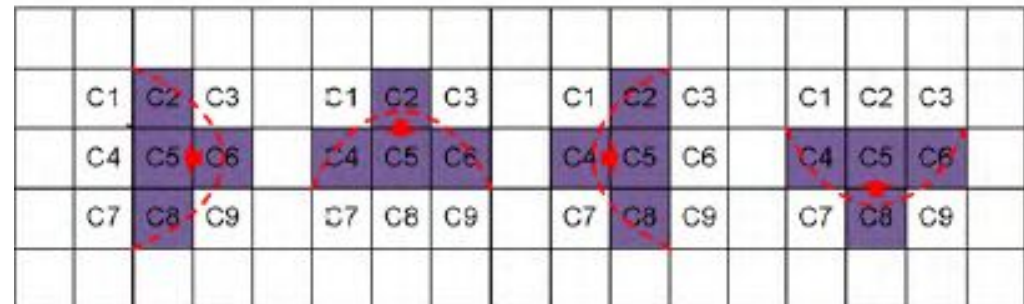
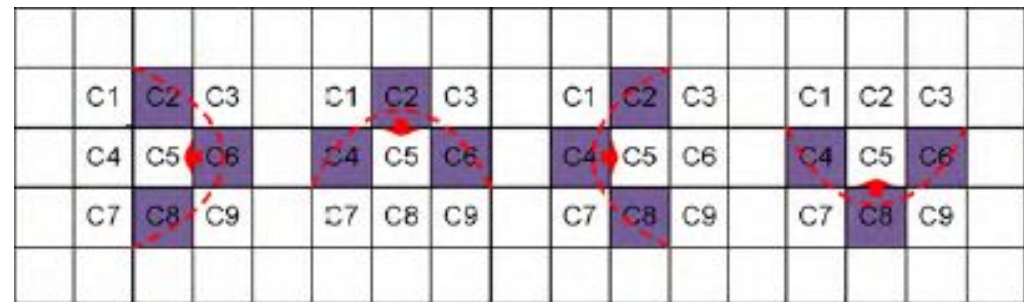
The id of particular cell depends on its all neighbors. If five to eight of the cells neighbors id's is equal to S, then cell transforms to the state S



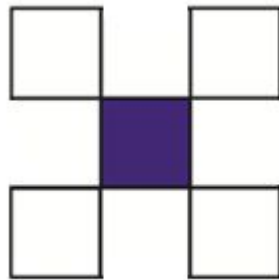
Rule 2



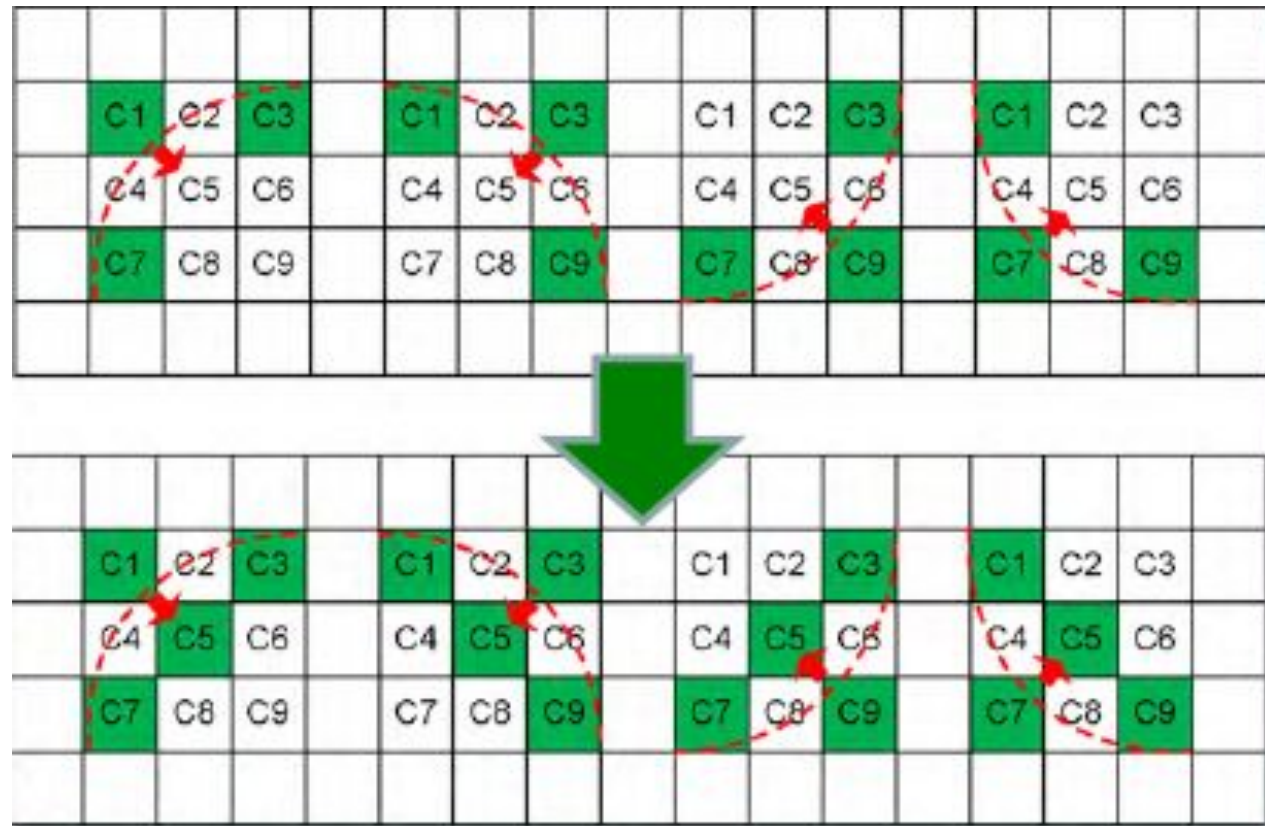
The id of particular cell depends on its nearest neighbors. If at least three of the cells neighbors id's is equal to S, then cell transforms to the state S



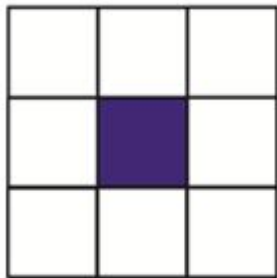
Rule 3



The id of particular cell depends on its further neighbors. If at least three of the cells neighbors id's is equal to S, then cell transforms to the state S



Rule 4



The id of particular cell depends on its all neighbors, and has X % probability chance to change.

Q1	Q1	Q2
Q3		Q2
Q3	Q2	Q2

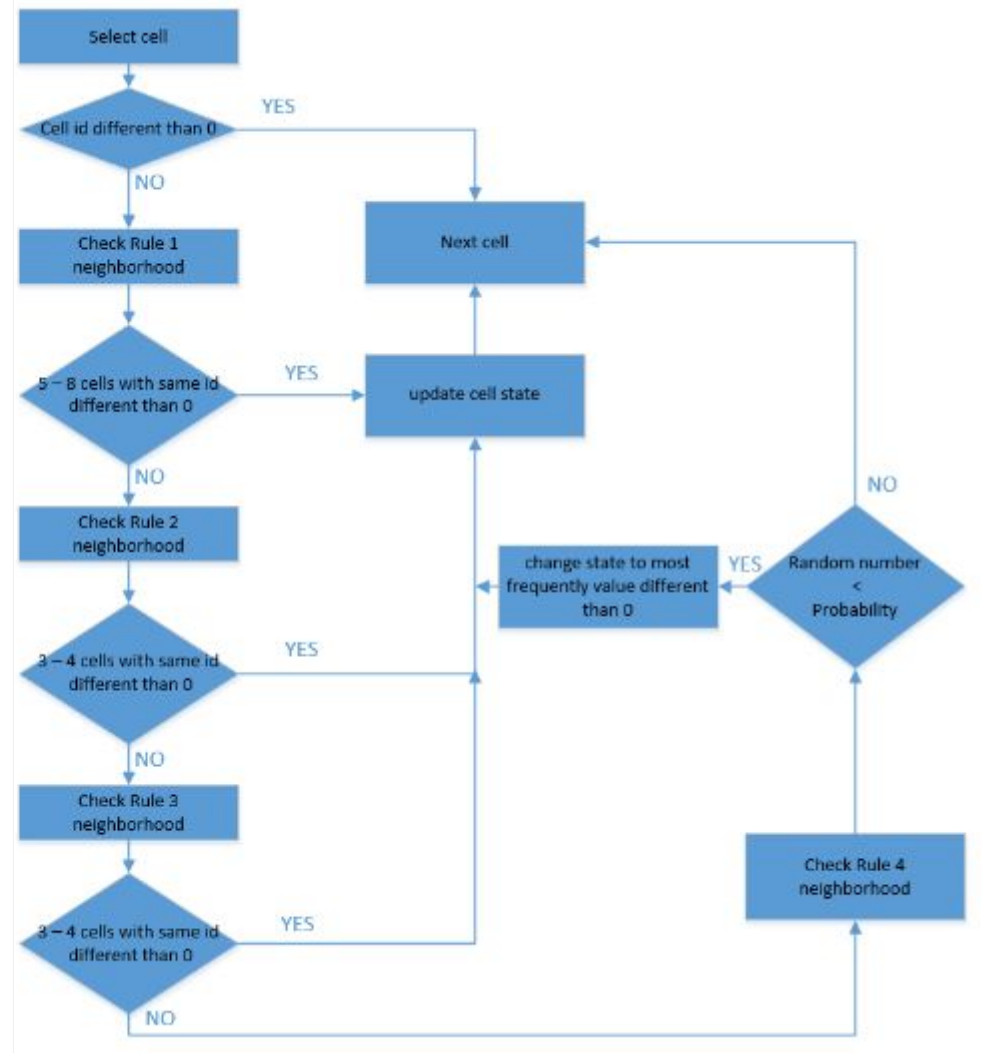
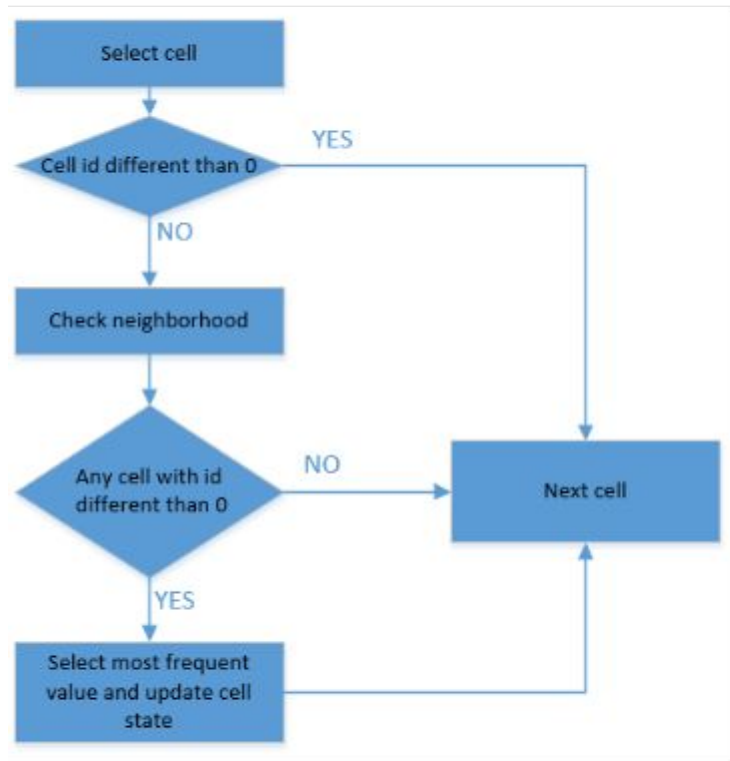
If random
 $n \leq X$



$n \in (1 - 100)$

Q1	Q1	Q2
Q3	Q2	Q2
Q3	Q2	Q2

Flow diagram



Implementation



- User can turn on / off the Grain Boundary Curvature (GBC) feature
- If GBC is turned on Boundary Condition selection component should be disabled with Moore option as pre-selected one
- User should be able to input threshold value for Rule no. 4 (X - probability of change)