Cellular Automata and their Application to Generative Image Processing Tasks

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# Introduction

Cellular automata are mathematical idealizations of physical systems in which space and time are discrete, and physical quantities take on a finite set of discrete values. A cellular automaton consists of a regular uniform ***lattice*** ( or ***array***), usually extending infinitely with discrete variable at each ***site*** (or ***cell***). The ***state*** of a cellular automaton is completely specified by the values of the variables at each site. A cellular automaton evolves in discrete time steps, with the value of the variable at one site being affected by the values of variables at sites in its ***neighborhood*** on the previous time step.

# References

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[5] [Reliable Cellular Automata with Self-Organization, Peter Gacs, Boston U., 2024](https://github.com/dimitarpg13/dynamical_systems_and_ergodicity/blob/main/literature/articles/cellular_automata/Reliable_Cellular_Automata_with_Self-Organization_Gacs_2024.pdf)

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