Motivation

Cellular Automata are used in Natural Science as well as in Social Sciences to simulate various processes. Since simulation of cellular automata is a calculation-intensive task, parallelization is desired and promises to be highly scalable due to their high locality of computation.

Nowadays, Graphics Processing Units provide highly parallel computing power and are fully programmable. They also come with a huge memory bandwidth. This raises hopes that the implementation runs faster on a GPU than on an ordinary processor.

Various kinds of cellular automata, some of theoretical, some of practical interest, are implemented on a GPU and the performance is compared to the respective CPU implementations. The results point out the type of CA that is adequate for calculation on a GPU.