

Cellular automata are discrete systems with very simple rules but very diverse behaviour. Some cellular automata can generate high-quality pseudorandom bit sequences. This leads us to the question of whether cellular automata could be used in cryptography, as a replacement for stream ciphers for instance. We will create and compare various methods for generating long one-time-pads from short keys, where our methods will utilize cellular automata. Besides direct design of cryptographical algorithms, we will also create an evolutionary algorithm, which will try to connect our building blocks in the best possible way. The outcome of our work will be a Windows desktop application for file encryption.