Spiking Neuron Implementation of Genetic Algorithms for Optimization

Siegfried Ludwig, Joeri Hartjes, Bram Pol, Gabriela Rivas, Johan Kwisthout
Radboud University Nijmegen

- Implement genetic algorithm as spiking neural network to run on efficient neuromorphic hardware
- Chromosomes represented as neural spike trains
- Processed by neural ensembles for evaluation, selection (sort), crossover, mutation

Sequential design: each chromosome lies on single spike train processed over time
Parallel design: each gene of a chromosome lies on a separate spike train processed concurrently