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Active link
Neural Network Synthesis using Cellular Encoding and the Genetic Algorithm.

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@PhDThesis{Gruau:1994:thesis,
  author    = "F. Gruau",
  title     = "Neural Network Synthesis using Cellular Encoding and
              the Genetic Algorithm."
  school    = "Laboratoire de l'Informatique du Parallelisme, Ecole
              Normale Superieure de Lyon",
  year      = "1994",
  address   = "France",
  keywords   = "genetic algorithms, genetic programming",
  abstract  = "Artificial neural networks used to be considered only
              as a machine that learns using small modifications of
              internal parameters. Now this is changing. Such
              learning method do not allow to generate big neural
              networks for solving real world problems. This thesis
              defends the following three points:

(1) The key word to go out of that dead-end is
    \{modularity\}. (2) The tool that can generate
    modular neural networks is cellular encoding. (3) The
    optimization algorithm adapted to the search of
    cellular codes is the genetic algorithm.

The first point is now a common idea. A modular neural
network means a neural network that is made of several
sub-networks, arranged in a hierarchical way. For
example, the same sub-network can be repeated. This
thesis encompasses two parts.

The first part demonstrates the second point. Cellular
encoding is presented as a machine language for neural
networks, with a theoretical basis (it is a parallel
graph grammar that checks a number of properties) and a
compiler of high level language. The second part of the
thesis shows the third point: Application of genetic
algorithm to the synthesis of neural networks using
cellular encoding is a new technology. This technology
can solve problems that were still unsolved with neural
networks. It can automatically and dynamically
decompose a problem into a hierarchy of sub-problems,
and generate a neural network solution to the problem.

The structure of this network is a hierarchy of
sub-networks, that reflects the structure of the..."