

ABSTRACT

This work presents a general architecture of an evolutionary system for electronic analog circuits based on genetic algorithms. The platform design enables interoperability of its main components including module substitution or functionality improvement. In the current version it implements the extrinsic model, that means, circuit simulation aiming the flexibility and easy experimentation. It enables free interconnection on a number of nodes of a circuit to be synthesized or adapted. The evolutionary technique – Genetic Algorithms – is used to search for the best interconnection solution on the desired circuit or circuit function. In the current version it makes use of the MATLAB with a genetic algorithm toolbox and the PSpice to simulate circuits. The case studies presented demonstrate the potential of the platform to adapt electronic circuits.

Keywords: Evolutionary electronics. Reconfigurable platforms. Adaptive hardware. Adaptive systems. Evolutionary systems. Genetic algorithms. Electronic circuits.