

# 综合神经网络与遗传算法的图形重构方法研究

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**摘 要:** 针对神经网络与遗传算法在图形重构设计中的广泛性和差异性, 以苗族蜡染图形设计为例, 对二者进行应用对比分析. 首先, 运用神经网络与遗传算法进行蜡染图形的框架重构. 再结合拓扑构型对图形元素进行变换填充, 从而生成不同元素、相同结构和不同结构、相同元素之间的图形组, 并对比分析两种算法对于本实例的综合特征. 结果表明: 在面积比例、纹样元素、框架构型和应用场景多样性四个设计要素中, 这两种算法各有优劣势存在; 并且在本案例中, BP 神经网络生成方案的权值总和大于 GA 生成方案的权值总和, 其大于的值为 0.5625.

**关键词:** BP 神经网络; 遗传算法; 拓扑构型; 对比分析; 图形重构

## Research on graph reconstruction method based on neural network and genetic algorithm

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**Abstract:** Aiming at the universality and difference of neural network and genetic algorithm in graphic reconstruction design, this study takes Miao nationality batik graphic design as an example, and makes a comparative analysis of the application of the two. Firstly, neural network and genetic algorithm are used to reconstruct the frame of batik graphics. Combined with the topological configuration, the graphics elements are transformed and filled, and the graphics groups of different elements, the same structure and the same elements are generated, and the comprehensive features of the two algorithms for the example are compared and analyzed. The results show that these two algorithms have their own advantages and disadvantages among the four design elements: area ratio, pattern element, frame configuration and application scene diversity. And in this case, the total weight of BP neural network generation scheme is greater than the total weight of GA generation scheme, which is 0.5625.

**Key words:** BP neural network; genetic algorithm; topological configuration; comparative analysis; graphic reconstruction

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