

## A Survey of Grammar-Based Genetic Programming and Applications

**Authors :** Matthew T. Wilson

**Abstract :** This paper covers a selection of research utilizing grammar-based genetic programming, and illustrates how context-free grammar can be used to constrain genetic programming. It focuses heavily on grammatical evolution, one of the most popular variants of grammar-based genetic programming, and the way its operators and terminals are specialized and modified from those in genetic programming. A variety of implementations of grammatical evolution for general use are covered, as well as research each focused on using grammatical evolution or grammar-based genetic programming on a single application, or to solve a specific problem, including some of the classically considered genetic programming problems, such as the Santa Fe Trail.

**Keywords :** context-free grammar, genetic algorithms, genetic programming, grammatical evolution

**Conference Title :** ICGEC 2020 : International Conference on Genetic and Evolutionary Computation

**Conference Location :** Miami, United States

**Conference Dates :** March 12-13, 2020