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

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**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.

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