Hybridising Genetic Programming Variants for Regression

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Genetic programming has been fairly successfully at solving real-world symbolic regression problems. Various variations of genetic programming such as Cartesian genetic programming (CGP), gene expression programming (GEP) and grammatical evolution(GE) aim to provide improvements over canonical GP and therefore different variants have different strengths and weaknesses. This study investigates harnessing the advantages of the different GP variants by hybridising these variants of genetic programming to solve symbolic regression problems. A genetic algorithm (GA4H) is used to optimise the hybridisation of the variants. The approach was tested on 4 GP benchmark regression problems and a real-world problem. In all cases the hybrid performed better than each variant applied individually. In addition to this GA4H was applied to a large real-world problem, namely, the Google web traffic problem, to assess scalability. GA4H was found to perform competitively to state of the art techniques on this problem.

**Keyword**: Hybridising, Programming, Variant, Regression, Problem