

GRAMMATICAL EVOLUTION FOR FEATURE EXTRACTION WITH MULTI FITNESS EVALUATION

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ABSTRACT

Feature Extraction is a significant topic in classification problem. Until now, there is no standard way to determine best features of data. In this thesis, grammatical evolution with multiple fitness evaluation approach (named as GE Tatami) has been developed to extract best features of data. The method generates $n-1$ features to separate data hierarchically, with n is number of classes.

Some methods have been evaluated in this research, including genetics algorithm, grammatical evolution with global fitness measurement, grammatical evolution with multi fitness measurement, grammatical evolution with Tatami fitness measurement, and Gavrilis's grammatical evolution.

It is shown in the experiment that Tatami method produces better results compared to the four other methods for synthesis data using decision tree classifier. The synthesis data is hierarchically separable. However Tatami method fails to boost SVM's accuracy. This method also fails when ideal features cannot be found.

Keywords: feature extraction, grammatical evolution, classification, multi-fitness.



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