

A Boosting approach for predicting Slope of ALS

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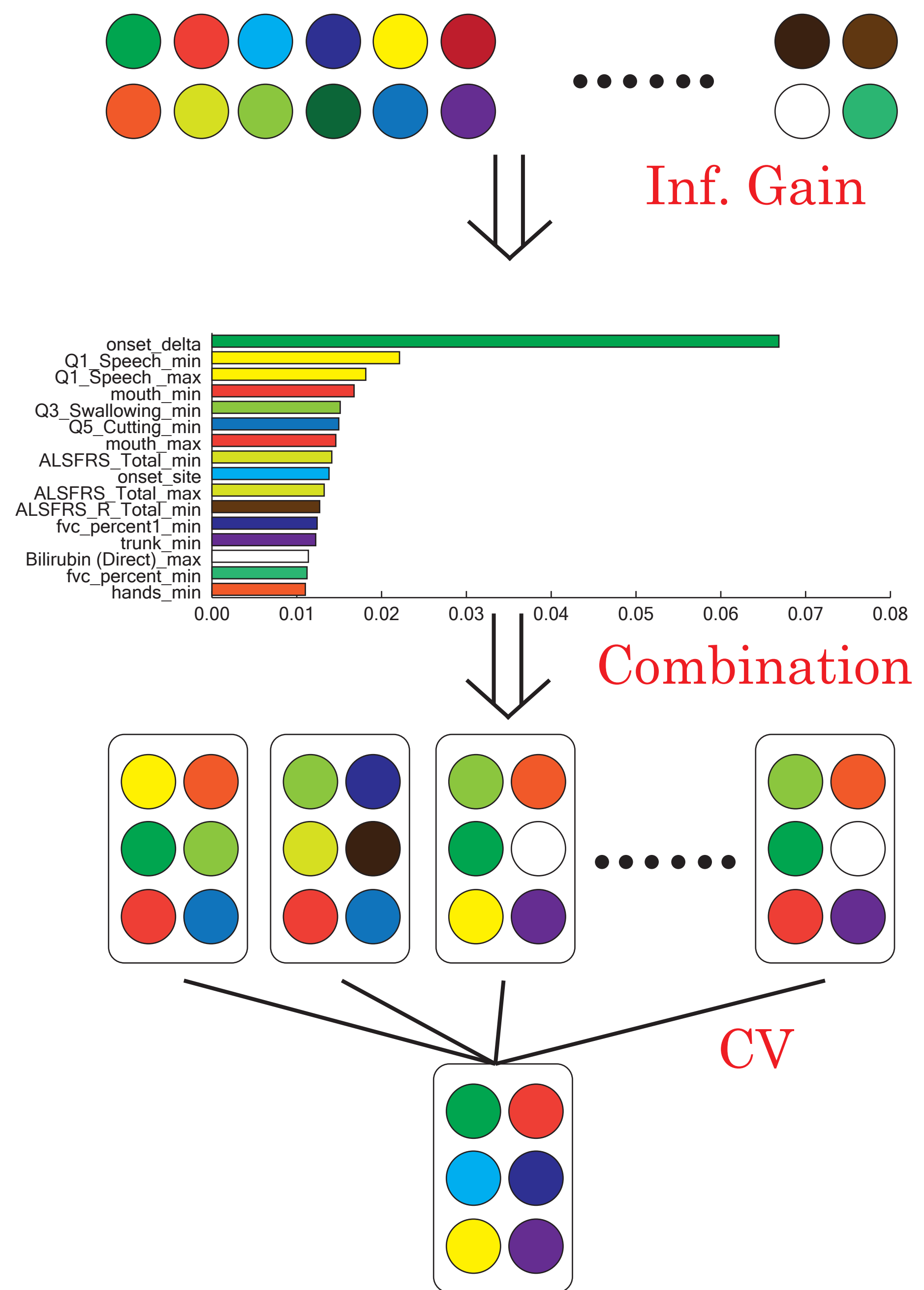
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Introduction

In Sub-challenge1 we develop a model to predict the progression of the ALS patients using the PRO-ACT datasets. The input of the model is patient's 6 kinds of information collected during 3 months, and the output is the predicted slope of "The ALS Functional Rating Scale" for the next 9 months. We create two algorithms - "selector" which selects 6 features and "predictor" which predicts outcomes based the output of selector.



Selector

We rank the features based on the information gain, create several feature subsets, and then run the cross validation to select the optimal subset.

Predictor

We apply Gradient Boosted Regression Trees (GBRT) to predict the ALSFRS slopes. GBRT computes a sequence of simple decision trees, where each successive tree is built for the prediction residuals of the preceding tree. We estimate its parameter values after examining how these parameters affect the model.

