

DynaPGN:

Dynamizing the model construction of associative classifier PGN

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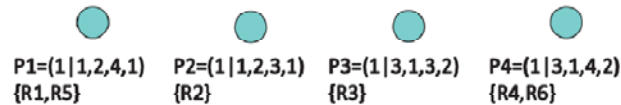
A few words for PGN

- Associative classifier
- Main distinctive difference – prioritizing confidence before the support

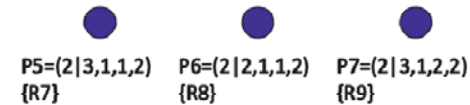
PGN - training process

- generalization (the process of associative rule mining)
 - (1) Adding instances to the sub-set in the pattern set, correspondingly to their class-labels;

Class 1

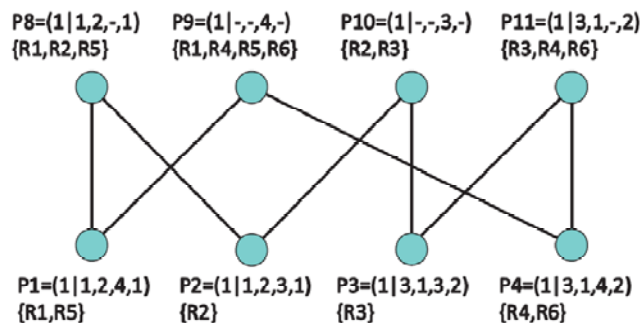


Class 2

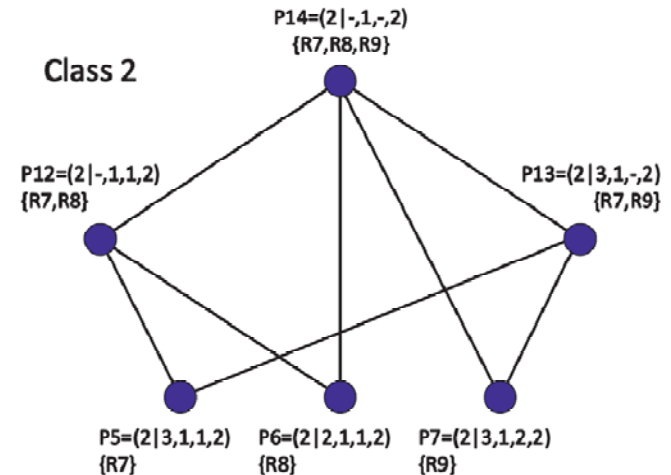


- (2) Creating all possible intersection patterns between patterns within the class.

Class 1



Class 2

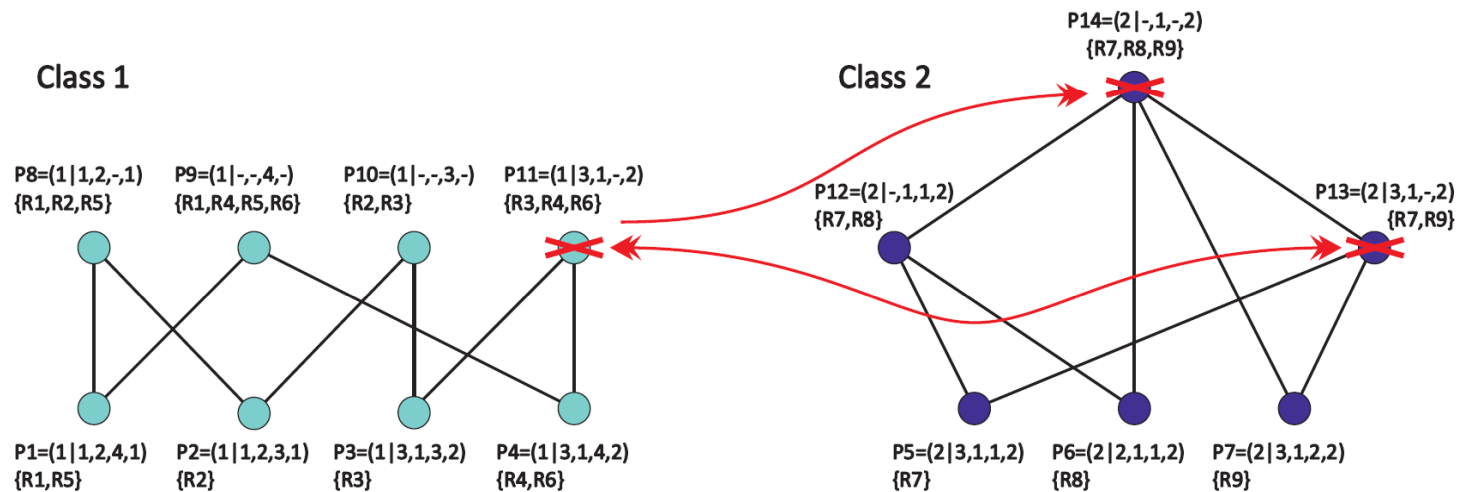


PGN - training process

- **pruning**

(1) Deleting all contradictory patterns as well as general patterns that have exception patterns in some other class.

This step tries to supply the maximum confidence of the resulting rules

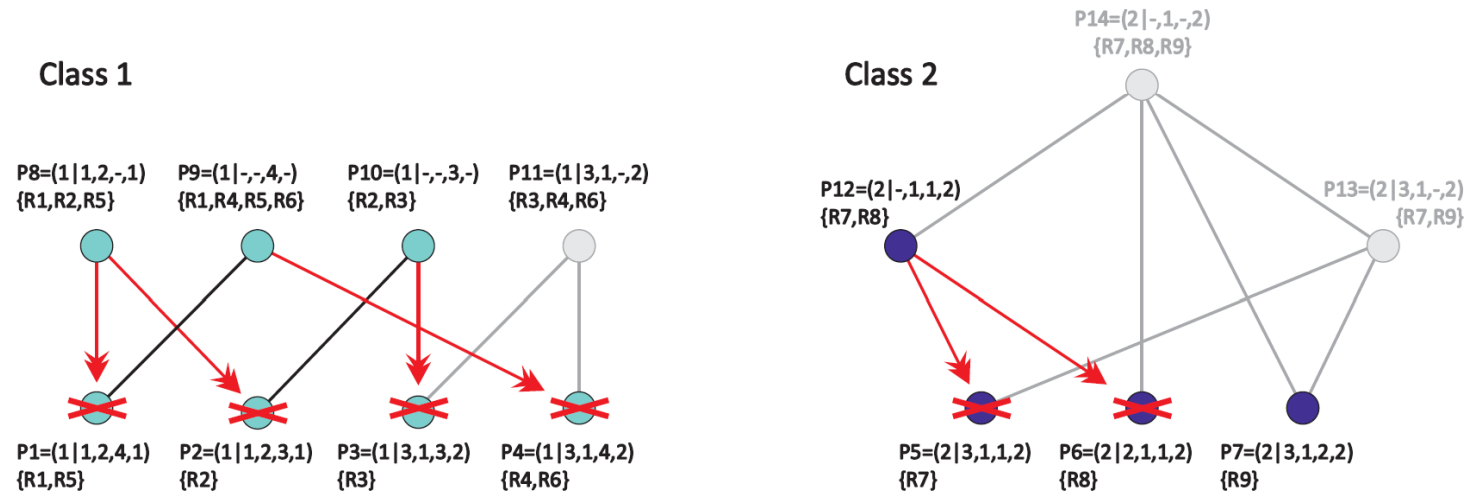


PGN - training process

- pruning

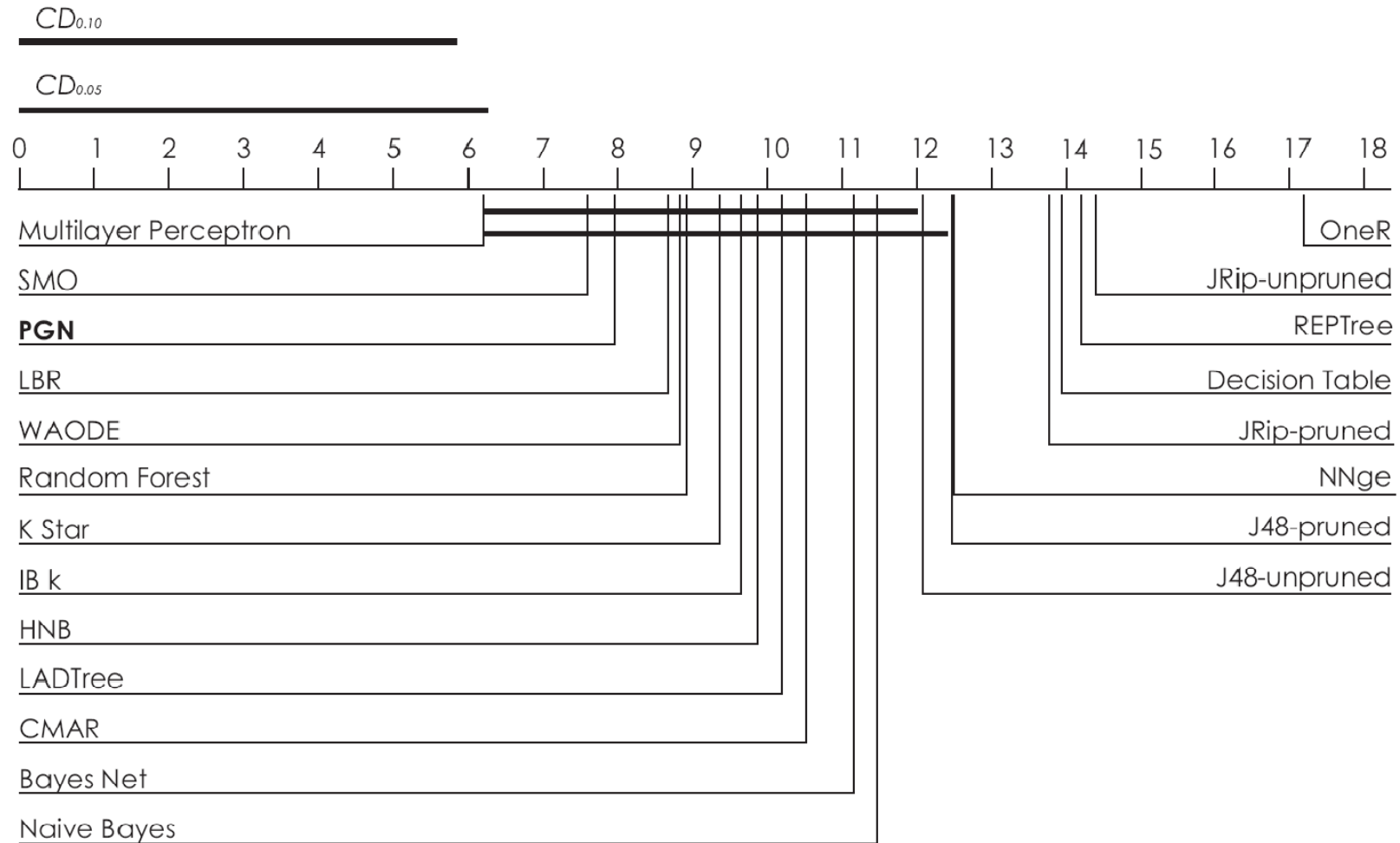
(2) Removing more concrete patterns within the classes.

This step ensures compactness of the recognition set.



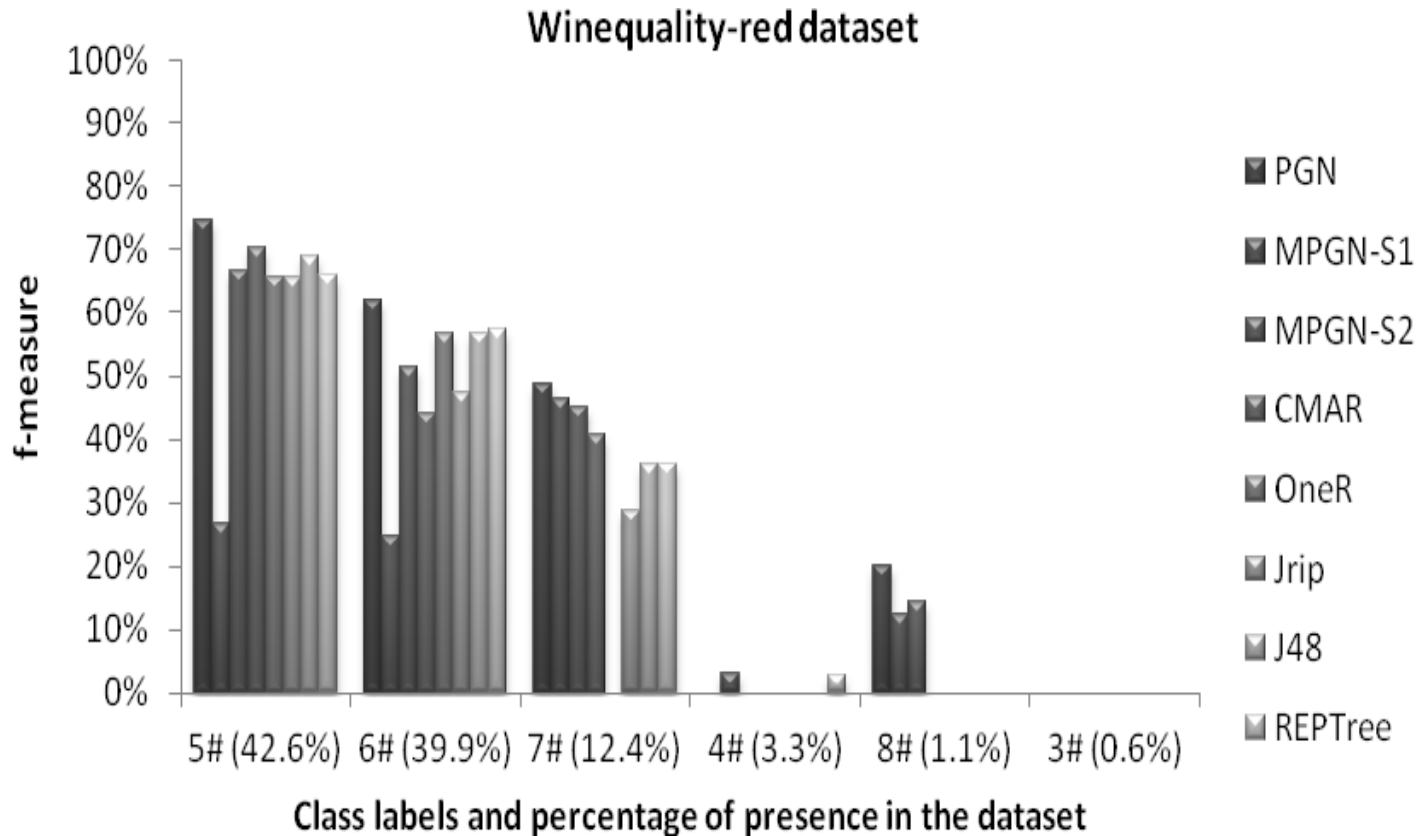
Some promising results

25 datasets; 21 classifiers



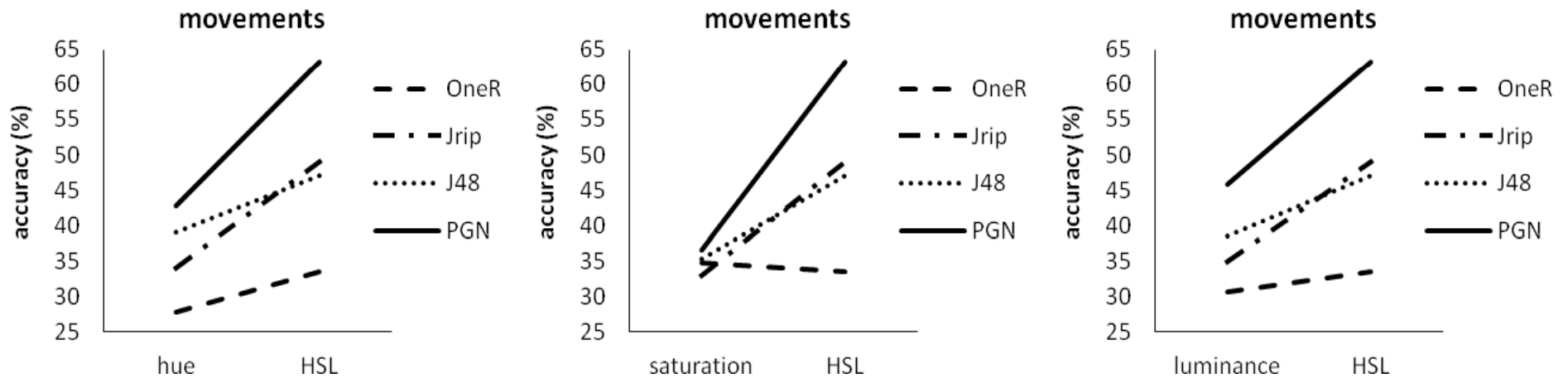
Some promising results

- The analysis of F-measures for different datasets with multiple classes and non-uniform distribution showed that PGN has not only good recognition accuracy for the chosen datasets, but also it **recognizes small classes** controversy to the other classifiers.



Some promising results

hue, saturation, luminance separately and all three together



DynaPGN

- The main problem for constructing DynaPGN is to overcome this static order of phases of the recognition model building
- The heaviness of previous algorithm is that the step of extracting non-contradictory rules has to be started only after finishing the previous one

Research tools

? - exponential growth of arisen combinations between patterns in the phase of the rule mining:

- (1) creating of efficient algorithm that minimizes the need of intersections
- (2) using of inverted indexes for efficient storing and processing with the patterns

ArM - access method that allows to keep the results of intermediate steps in a high compact and efficient way.

- DynaPGN can be used in large scale application areas where incoming information have to be evaluated dynamically. Such kinds of approaches help to make the estimation of surrounded environment more flexible and conformable.
- The real time regime of working of current systems leads to necessity to break the approach of static construction of some kind of vision – in many times, the incoming information influence not only on changing the schema of analysis of received features in the frame of already fixed concepts and visions, but also can bring the features of arising the new ones.