

# Rcpp Implementation of Entropy Based Feature Selection Algorithms with Sparse Matrix Support

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## Abstract

Feature selection is a process of extracting valuable features that have significant influence on dependent variable. Time efficient feature selection algorithms are still an active field of research and are in the high demand in the machine learning area.

We introduce **FSelectorRcpp**, an R package (R Core Team, 2012) that includes entropy based feature selection algorithms. Methods presented in this package are not new, they were reimplemented in C++ and originally come from **FSelector** package (Romanski and Kotthoff, 2016). Our reimplementation occurs to have shorter computation times, it does not require earlier Java nor Weka (Hall et al., 2009) installation and provides support for sparse matrix format of data, e.g. presented in **Matrix** package (Bates and Maechler, 2016). This approach facilitates software installation and improves work with bigger datasets, in comparison to the base R implementation in **FSelector**, which is even not optimal in the sense of R code.

Additionally, we present new, C++ implementation of continuous variables Multi-Interval Discretization (MDL) method (Fayyad and Irani, 1993), which is required in entropy calculations during the feature selection process in showed methods. By default, regular **FSelector** implementation uses **entropy** package (Hausser and Strimmer, 2014), for which we also attach the computation times comparison.

Finally, we announce the full list of available functions, which are divided to 2 groups: entropy based feature selection methods and stepwise attribute selection functions that might use any evaluator to choose proper features, e.g. presented entropy based algorithms.

## Introduction and Motivation

## Bibliography

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