survivalSL: an R Package for Predicting Survival by a Super Learner

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Summary

The R package survivalSL contains a variety of functions to construct a Super Learner in the presence of censored times-to-event and to evaluate its prognostic capacities. Compared to existing packages, it provides additional learners, loss functions for parameter estimation, and user-friendly functions for evaluating prognostic performance and predicting survival curves for new observations. Simulations were realized to illustrate the value of the package. Because machine learning is increasingly used in predictive studies with right-censoring, this solution can be useful for a large community of data analysts, beyond this clinical application. In the context of my thesis, I apply this package for flexible dynamic risk prediction.

Key words : Machine Learning – Ensemble Learning – Censored time-to-event outcomes – Prediction – Survival – Loss functions – Super Learner

Development

1. Brief introduction to Super Learner and its principles.

2. Presentation and application of the survivalSL package, highlighting its main functionalities.

3. Finally, explanation of how the package is used in the context of my thesis, particularly to perform flexible risk predictions.

References

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