

Intro to tidymodels



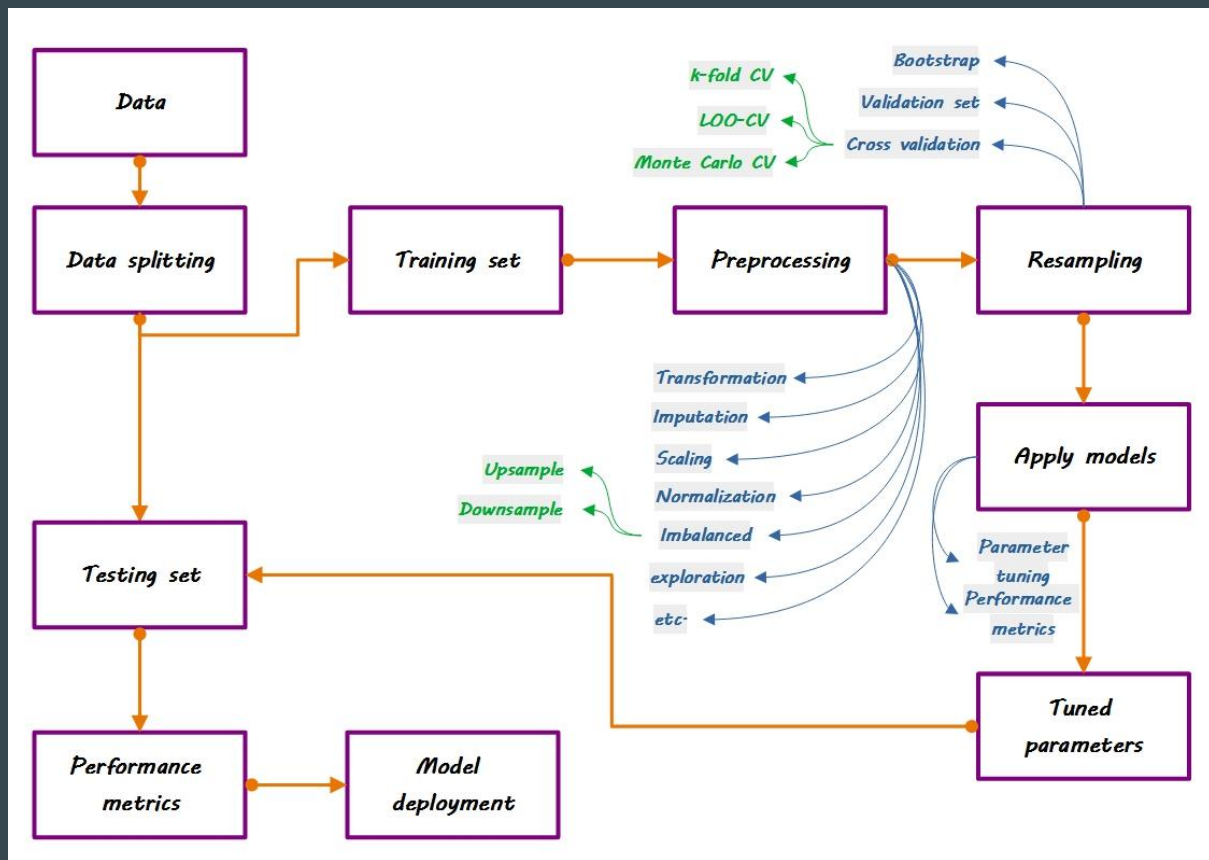
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What is tidymodels?

- A framework - collection of packages for modeling and machine learning using tidyverse principles
- Successor of caret package
- Lead by Max Kuhn and his team at R Studio
- Why tidymodels:
 - Overcome limitations of caret
 - Developed by R Studio team
 - Developed by Max Kuhn - experienced biostatistician, previously work with Pfizer (> 10 years)
 - Probably going to be a standard approach in R for ML (personal opinion)

- Why not tidymodels?
 - Still in development (lacking documentation in certain areas)
 - Complicated especially for beginners

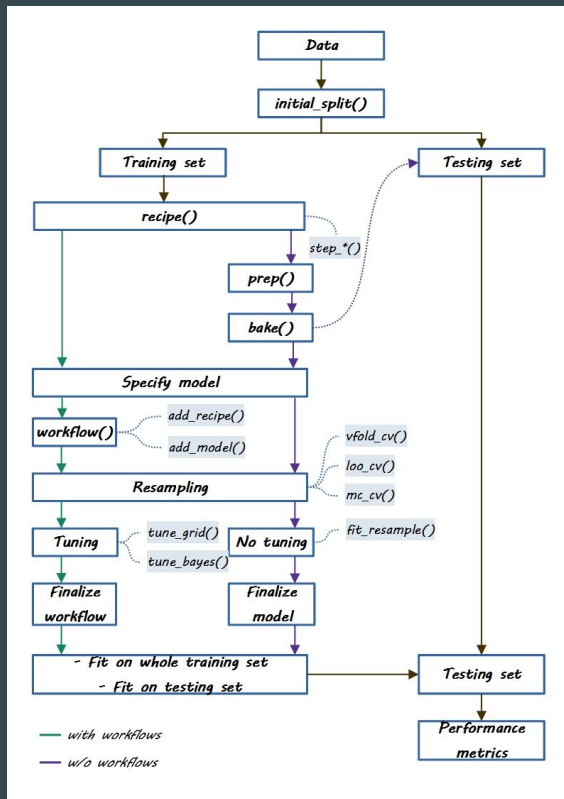
General flow of machine learning



- Recommended preprocessing steps*:
 - a. Imputation
 - b. Handle factor levels
 - c. Individual transformation for skewness and other issues
 - d. Discretize (last resort)
 - e. Create Dummy variable
 - f. Create interactions
 - g. Normalization steps (center, scale, etc)
 - h. Multivariate transformation (PCA, spatial sign, etc)

*<https://recipes.tidymodels.org/articles/Ordering.html>

General flow of tidymodels



Packages in tidymodels

- Core packages:
 - Recipes: preprocessing
 - rsamples: resample process
 - parsnip: apply various ML models
 - tune, dials: parameters tuning
 - yardstick: performance metrics
 - workflows: bind all the process in workflow
 - brooms: extract information from ML model

- Specialized packages*:
 - corr: for working with correlation matrices
 - spatialsample: resampling process for spatial data
 - finetune: more advanced tuning parameter approach
 - themis: upsample and downsample for class imbalance
 - discrim: discriminant analysis model
 - plsmod: partial least square model
 - rule: rule based models (cubist, RuleFit, c5.0, etc)
 - baguette: ensemble ML (bagging @ bootstrap aggregating method)
 - stacks: ensemble ML (stacking method)
 - poissonreg: various type of poisson regression
 - etc.

*<https://www.tidymodels.org/packages/#specialized-packages>

Good references

- <https://www.tidymodels.org/>
- <https://www.tmwr.org/> (online book)
- <https://www.youtube.com/c/JuliaSilge> (Julia Silge's youtube)

Questions?



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