Package Development

2025-01-29

🗺 Objectives

This homework is concerned with developping methods for objects produced by factorial methods like Correspondence Analysis, Multiple Correspondence Analysis, Canonical Correlation Analysis, … (`R`).

Supplementing the `broom` package

The `broom` package offers `S3` generic functions for building dataframes from the output of a variety of statistical techniques (for example `lm`, `prcomp`, or `kmeans`): `augment`, `tidy`, and `glance`.

The first goal of this homework is to design and code methods for generic functions `augment`, `tidy`, and `glance` for classes `CA`, `MCA`, `CCA`.

You may use classes `CA`, `MCA`, and `CCA` from `FactoMineR` or design your own classes.

Programming with `dplyr` and `ggplot2`

The second goal of this homework is to design and code functions that take as input the output of `augment`, `tidy`, and `glance` (possibly simultaneously) to build `ggplot` objects corresponding to the plots associated with `CA`, `MCA`, and `CCA` (screeplot, row plot, column plot, and symmetric plot).

> **Note**
>
> `ggplot2` offers a generic function `autoplot()`. See Tidyverse documentation on `autoplot`, More generally have a look at automatic plotting

The third goal of this homework is to design and code methods for generic function `autoplot()` for classes `CA`, `MCA`, `CCA`.

> **Tip**
>
> Have a look at `autolayer()` generic. Could be useful for implementing symmetric plots (biplots).

Package development

The function and methods coded in this homework should be delivered as a `package`.

Follow the package devlopment guidelines in R Packages (2e).

- Define a dedicated rstudio project for this homework
- Don't forget documentation and testing

References

- Advanced R Programming
- S3
- Programming with/for `ggplot2`
- Cheatsheets
- Packages

🎓 Grading criteria

Criterion	Points	Details
Documentation	25%	English/French 🖌
Testing	25%	✔
Coding	50%	</>