ggparty: Tree Visualisation with ggplot

Project partner: Heidi Seibold, IBE
Outcome: R package
Team Size: 2

Project Background

Motivate the project and describe the background. This section is important for the students to understand the project and to convince them that this is an interesting project to work on.

One of the big advantages of decision trees is that they can be nicely represented visually. Several R packages implement tree plotting. None of them, however, build on the *ggplot2* infrastructure, which is one of the most popular graphical packages in R.

The *partykit* package is one of the most popular packages for trees (including algorithms like `ctree`, `mob`, `lmtree`, `glmtree`). Furthermore, it provides a unified tree class called `party` that provides general and extensible methods for `print`, `predict`, and `plot`. As tree objects from other packages (like *rpart*) can be easily converted with `as.party` it makes a lot of sense to complement this with *ggplot2* functionality.

Milestones

Please break down the project into smaller goals here. The clearer the outcomes are defined, the better.
What is essential and what is optional?

M1: Study prior work

- Study the grammar of *ggplot2*.
- Study how *ggplot2* extensions can be added and what needs to be done (see e.g. https://www.ggplot2-exts.org).
- Study other tree visualisation tools, in particular tree visualisation in *partykit*.
- Study *ggplot2* extensions that are similar to what you would like to implement (e.g. phylogenetic trees https://www.ggplot2-exts.org/ggtree.html, or graph data https://www.ggplot2-exts.org/ggraph.html).

M2: Setting up the project on GitLab or GitHub

- Create repository.
- Define project structure.
- Define R package structure.

M3: Implement and document R package

- Implement functions.

- Document functions in a way that
    a. Users can understand and use the package well.
    b. Future developers can understand your programming choices.
- Optional: Provide a vignette and a website (*pkgdown*).

M4: Decide on package maintenance

- Who will maintain the package in the future?
- What still needs to be done for the package to be submitted to CRAN?
- In consultation with the project partner: submit package to CRAN.