Statistics 360: Advanced R for Data Science

MARS, part V

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More details on the implementation

- So far we have discussed the input, pre-processing, forward algorithm and backward algorithm.
- Next is to bundle the output into an object of class mars and write methods for mars objects.

Value/output

- object of S3 class `mars`.
- inherits from class `lm` and includes all of the components of the `lm()` from the final fit
  - Use `c()` to combine these with any of your own components.
  - Note: `bwd_selection()` will *select* the best model but will not *return* the fit. You will need to call `lm()` after `bwd_selection()` to obtain the final fit.
- include `Bfuncs` data structure from final fit.
- write a constructor for this class – no need for a validator or helper since you are the only one who will call the constructor.

Methods

- Use `methods()` to find a list of methods implemented for the S3 class `lm`.
- Write more informative `print` and `summary` methods for `mars` objects
- Write a `plot` method.
  - The details are up to you, but you should consult Section 3.5 of the Friedman paper (ANOVA decomposition).
  - Two sources of inspiration are the `plot.earth` method for `earth` objects (see the earth package), and `plot.Gam` for plotting generalized additive model components (see the gam package).
- Write a `predict` method with the same interface as `predict.lm`.
- `residuals()`, `fitted()`, `hatvalues()` and others that depend only on the final `lm` can be used as-is