bnclassify

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`r Sys.Date()`

```
{r, echo = FALSE} knitr::opts_chunk$set(collapse = TRUE, comment
= "#>")
```

Predicting

0 probabilities

If for some instance there is 0 probability for each class, then a uniform distribution over the classes is returned (not the class prior).

```
library(bnclassify)
data(car)
nb <- nb('class', car)
nb <- lp(nb, car[c(1, 700), ], smooth=0)
predict(object=nb, newdata=car[1000:1001, ], prob = TRUE)
```

Speed

It is much faster than gRain and identical to bnlearn.

```
nb <- nb('class', car)
nb <- lp(nb, car, smooth=0)
gr <- to_grain(nb)
microbenchmark::microbenchmark(predict(object=nb, newdata=car, prob = TRUE))
microbenchmark::microbenchmark(gRain::predict.grain(gr, 'class', newdata=car),
                               times=1)
```

Note that when predicting on a data set with incomplete cases, gRain is used underneath and it will be slow

Feature selection

Some algorithms perform implicit feature selection. E.g., ... For more, use the mlr or feature selector package. See below.

mlr package

It's easy to use bnclassify with the mlr package. If you have mlr installed, you just need to call `as_mlr()` to use mlr functions: select features, resample, etc.

```
library(mlr)
ctrl = makeFeatSelControlSequential(alpha = 0, method = "sfs")
rdesc = makeResampleDesc(method = "Holdout")
ct <- mlr::makeClassifTask(id = "compare", data = car, target = 'class',
                           fixup.data = "no", check.data = FALSE)
nf <- lp(nb('class', car), car, 1)
bnl <- as_mlr(nf, dag = TRUE)
sfeats = selectFeatures(learner = bnl, task = ct, resampling = rdesc,
                        control = ctrl, show.info = FALSE)
sfeats$x
detach('package:mlr')
```

Vignette docs

Vignettes are long form documentation commonly included in packages. Because they are part of the distribution of the package, they need to be as compact as possible. The `html_vignette` output type provides a custom style sheet (and tweaks some options) to ensure that the resulting html is as small as possible. The `html_vignette` format:

- Never uses retina figures
- Has a smaller default figure size
- Uses a custom CSS stylesheet instead of the default Twitter Bootstrap style

Vignette Info

Note the various macros within the `vignette` setion of the metadata block above. These are required in order to instruct R how to build the vignette. Note that you should change the `title` field and the `\VignetteIndexEntry` to match the title of your vignette.

Styles

The `html_vignette` template includes a basic CSS theme. To override this theme you can specify your own CSS in the document metadata as follows:

```
output:
  rmarkdown::html_vignette:
    css: mystyles.css
```

Figures

The figure sizes have been customised so that you can easily put two images side-by-side.

```
{r, fig.show='hold'} plot(1:10) plot(10:1)
```

You can enable figure captions by `fig_caption: yes` in YAML:

```
output:
  rmarkdown::html_vignette:
    fig_caption: yes
```

Then you can use the chunk option `fig.cap = "Your figure caption."` in **knitr**.

More Examples

You can write math expressions, e.g. $Y = X\beta + \epsilon$, footnotes[1], and tables, e.g. using `knitr::kable()`.

```
{r, echo=FALSE, results='asis'} knitr::kable(head(mtcars, 10))
```

Also a quote using `>`:

> "He who gives up [code] safety for [code] speed deserves neither." (via)

[1] A footnote here.