speedtest

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2018-10-22

Setup

```r
library(dynamichazard); library(microbenchmark)
```

```
## Loading required package: survival
```

```r
sim_func <- function(n, p){
  func <- asNamespace("dynamichazard")$test_sim_func_logit
  set.seed(101)
  t_max <- 30L
  func(n_series = n, n_vars = p, t_max = t_max, x_range = 1, x_mean = 0,
       beta_start = runif(p, -1.5, 1.5),
       intercept_start = -3, sds = c(.1, rep(.25, p)),
       tstart_sampl_func = function(t0, t_max)
         max(0, runif(1, -t_max, t_max - 1L)),
       lambda = 1 / 10)
}

get_rune_time_summary <- function(n, p){
  sims <- sim_func(n, p)

  out <- summary(microbenchmark(
    EKF_one_correction_step =
      suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1e6, p + 1L),
        Q = diag(1e-1, p + 1L))),

    EKF_more_correction_step =
      suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1, p + 1L),
        Q = diag(1e-1, p + 1L),
        control = list(NR_eps = 1e-3))),

    SMA = suppressMessages(ddhazard(
```

```r
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1e6, p + 1L),
        Q = diag(1e-1, p + 1L),
        control = list(method = "SMA"))),

    GMA = suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1, p + 1L),
        Q = diag(1e-1, p + 1L),
        control = list(method = "GMA"))),

    UKF = suppressMessages(ddhazard(
        formula = Surv(tstart, tstop, event) ~ . - id,
        data = sims$res,
        model = "logit",
        id = sims$res$id,
        by = 1L,
        max_T = 30L,
        Q_0 = diag(1, p + 1L),
        Q = diag(1e-1, p + 1L),
        control = list(method = "UKF"))),

    times = 1
  ))

  cat("(n, p) = (", n, ", ", p, ")",
      ". Units is ", sQuote(attr(out, "unit")), "\n", sep = "")

  print(out[, c("expr", "lq", "median", "uq")], row.names = FALSE)

  cat("\n\n")

  invisible()
}
```

Test

```r
grid_vals <- expand.grid(
  n = c(250, 1000, 10000),
  p = c(5, 10, 15))
```

```r
invisible(
  mapply(get_rune_time_summary, n = grid_vals$n, p = grid_vals$p))
```

```
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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

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## (n, p) = (250, 5). Units is 'milliseconds'
##                          expr    lq median    uq
##    EKF_one_correction_step  62.6   62.6  62.6
##   EKF_more_correction_step 117.5  117.5 117.5
##                        SMA 187.7  187.7 187.7
##                        GMA 191.3  191.3 191.3
##                        UKF 311.6  311.6 311.6

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## (n, p) = (1000, 5). Units is 'milliseconds'
##                          expr  lq median  uq
##    EKF_one_correction_step 181    181 181
##   EKF_more_correction_step 552    552 552
##                        SMA 601    601 601
##                        GMA 279    279 279
##                        UKF 512    512 512

## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## (n, p) = (10000, 5). Units is 'milliseconds'
##                          expr    lq median    uq
##    EKF_one_correction_step  373    373  373
##   EKF_more_correction_step  899    899  899
##                        SMA 2271   2271 2271
```

```
##                          GMA  841     841  841
##                          UKF 2480    2480 2480

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## (n, p) = (250, 10). Units is 'milliseconds'
##                       expr  lq median  uq
##   EKF_one_correction_step 133     133  133
##  EKF_more_correction_step 286     286  286
##                       SMA 464     464  464
##                       GMA 365     365  365
##                       UKF 1091    1091 1091

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## (n, p) = (1000, 10). Units is 'milliseconds'
##                       expr  lq median  uq
##   EKF_one_correction_step 154     154 154
##  EKF_more_correction_step 314     314 314
##                       SMA 734     734 734
##                       GMA 227     227 227
##                       UKF 968     968 968

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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (10000, 10). Units is 'milliseconds'
##                       expr  lq median  uq
##   EKF_one_correction_step 449     449  449
##  EKF_more_correction_step 1050    1050 1050
##                       SMA 5228    5228 5228
##                       GMA 1126    1126 1126
```

```
##                          UKF 4143    4143 4143
## Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
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## (n, p) = (250, 15). Units is 'milliseconds'
##                        expr   lq median   uq
##    EKF_one_correction_step  320    320  320
##   EKF_more_correction_step  381    381  381
##                        SMA 1122   1122 1122
##                        GMA  479    479  479
##                        UKF 2291   2291 2291

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## (n, p) = (1000, 15). Units is 'milliseconds'
##                        expr   lq median   uq
##    EKF_one_correction_step  213    213  213
##   EKF_more_correction_step  490    490  490
##                        SMA 1029   1029 1029
##                        GMA  360    360  360
##                        UKF 1637   1637 1637

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## $res, : 'ddhazard_control' instead of 'list' to the 'control' argument

## (n, p) = (10000, 15). Units is 'milliseconds'
##                        expr   lq median   uq
##    EKF_one_correction_step  458    458  458
##   EKF_more_correction_step 1092   1092 1092
##                        SMA 4678   4678 4678
##                        GMA 1293   1293 1293
##                        UKF 5891   5891 5891
```

Session info

- R version 3.5.0 (2018-04-23), `x86_64-w64-mingw32`

- Locale: `LC_COLLATE=English_United States.1252`, `LC_CTYPE=C`, `LC_MONETARY=English_United States.1252`, `LC_NUMERIC=C`, `LC_TIME=English_United States.1252`

- Running under: `Windows 10 x64 (build 17134)`

- Matrix products: default

- Base packages: base, datasets, graphics, grDevices, methods, stats, utils

- Other packages: dynamichazard 0.6.1, microbenchmark 1.4-4, survival 2.41-3

- Loaded via a namespace (and not attached): backports 1.1.2, boot 1.3-20, compiler 3.5.0, digest 0.6.15, evaluate 0.10.1, grid 3.5.0, htmltools 0.3.6, knitr 1.20, lattice 0.20-35, magrittr 1.5, Matrix 1.2-14, parallel 3.5.0, Rcpp 0.12.18, rmarkdown 1.9, rprojroot 1.3-2, splines 3.5.0, stringi 1.1.7, stringr 1.3.0, tools 3.5.0, yaml 2.1.18