speedtest

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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 = 5
  ))

  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))
```

```
## (n, p) = (250, 5). Units is 'milliseconds'
##                          expr    lq median    uq
##    EKF_one_correction_step  63.9   66.2  68.2
##  EKF_more_correction_step 108.6  114.0 118.2
##                           SMA 183.6  192.8 198.8
##                           GMA 178.6  184.1 185.4
##                           UKF 274.9  277.8 285.6
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##                          expr  lq median  uq
##    EKF_one_correction_step 208    209 209
##  EKF_more_correction_step 541    553 556
##                           SMA 561    582 584
##                           GMA 272    280 280
##                           UKF 473    478 492
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##                          expr   lq median   uq
##    EKF_one_correction_step  356    359  367
##  EKF_more_correction_step  872    874  890
##                           SMA 2454   4326 4338
##                           GMA  823    829  835
##                           UKF 2342   2448 2467
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##                          expr  lq median  uq
##    EKF_one_correction_step 108    122 141
##  EKF_more_correction_step 246    246 250
##                           SMA 439    444 448
##                           GMA 364    364 374
##                           UKF 846    865 866
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##                          expr  lq median  uq
##    EKF_one_correction_step 134    136 136
##  EKF_more_correction_step 286    297 300
##                           SMA 541    571 793
##                           GMA 215    216 220
##                           UKF 759    773 776
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##                          expr   lq median   uq
##    EKF_one_correction_step  427    431  506
##  EKF_more_correction_step  958    967 1003
##                           SMA 3133   3133 4996
##                           GMA 1060   1068 1072
```

```
##                      UKF 3635    3651 3672
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##   EKF_one_correction_step  293    301  302
##  EKF_more_correction_step  314    320  322
##                        SMA  901    955  968
##                        GMA  419    431  454
##                        UKF 2018   2018 2020
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##   EKF_one_correction_step  210    211  212
##  EKF_more_correction_step  430    432  444
##                        SMA  982   1101 1119
##                        GMA  336    348  348
##                        UKF 1452   1469 1471
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##   EKF_one_correction_step  403    417  418
##  EKF_more_correction_step  911    938  939
##                        SMA 4110   4187 5585
##                        GMA 1095   1133 1176
##                        UKF 4889   4957 4984
```

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 16299)`

- Matrix products: default

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

- Other packages: dynamichazard 0.5.2, 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 0.12.16, 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