speedtest

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Setup

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

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

```
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(
        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

```
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  80.6   80.6  80.6
##  EKF_more_correction_step 131.6  131.6 131.6
##                         SMA 203.7  203.7 203.7
##                         GMA 203.9  203.9 203.9
##                         UKF 377.5  377.5 377.5
## 
## 
## (n, p) = (1000, 5). Units is 'milliseconds'
##                        expr  lq median  uq
##   EKF_one_correction_step 194    194 194
##  EKF_more_correction_step 637    637 637
##                         SMA 721    721 721
##                         GMA 368    368 368
##                         UKF 526    526 526
## 
## 
## (n, p) = (10000, 5). Units is 'milliseconds'
##                        expr   lq median   uq
##   EKF_one_correction_step  391    391  391
##  EKF_more_correction_step 1020   1020 1020
##                         SMA 3107   3107 3107
##                         GMA 1060   1060 1060
##                         UKF 2465   2465 2465
## 
## 
## (n, p) = (250, 10). Units is 'milliseconds'
##                        expr   lq median   uq
##   EKF_one_correction_step  127    127  127
##  EKF_more_correction_step  288    288  288
##                         SMA  541    541  541
##                         GMA  442    442  442
##                         UKF 1179   1179 1179
## 
## 
## (n, p) = (1000, 10). Units is 'milliseconds'
##                        expr  lq median  uq
##   EKF_one_correction_step 165    165 165
##  EKF_more_correction_step 325    325 325
##                         SMA 923    923 923
##                         GMA 267    267 267
##                         UKF 907    907 907
## 
## 
## (n, p) = (10000, 10). Units is 'milliseconds'
##                        expr   lq median   uq
##   EKF_one_correction_step  505    505  505
##  EKF_more_correction_step 1060   1060 1060
##                         SMA 3474   3474 3474
##                         GMA 1196   1196 1196
##                       UKF 4715   4715 4715
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  300    300  300
##  EKF_more_correction_step  349    349  349
##                       SMA 1053   1053 1053
##                       GMA  459    459  459
##                       UKF 2175   2175 2175
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  220    220  220
##  EKF_more_correction_step  458    458  458
##                       SMA 1401   1401 1401
##                       GMA  347    347  347
##                       UKF 1560   1560 1560
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  468    468  468
##  EKF_more_correction_step 1001   1001 1001
##                       SMA 4382   4382 4382
##                       GMA 1196   1196 1196
##                       UKF 5247   5247 5247
```

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 0.5.2, 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