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  60.5   64.4  67.3
##  EKF_more_correction_step 119.5  127.1 131.4
##                       SMA 188.6  206.3 207.9
##                       GMA 181.0  183.3 188.7
##                       UKF 281.0  282.7 304.3
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##                      expr  lq median  uq
##    EKF_one_correction_step 192    199 207
##  EKF_more_correction_step 533    538 543
##                       SMA 564    565 579
##                       GMA 262    262 267
##                       UKF 480    484 485
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##                      expr   lq median   uq
##    EKF_one_correction_step  355    363  385
##  EKF_more_correction_step  872    872  875
##                       SMA 2325   2347 2503
##                       GMA  801    808  848
##                       UKF 2321   2366 2419
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##                      expr  lq median  uq
##    EKF_one_correction_step 105    113 114
##  EKF_more_correction_step 233    236 243
##                       SMA 434    435 436
##                       GMA 355    359 364
##                       UKF 827    831 836
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##                      expr  lq median  uq
##    EKF_one_correction_step 128    130 138
##  EKF_more_correction_step 296    300 302
##                       SMA 523    526 528
##                       GMA 212    213 216
##                       UKF 738    758 760
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##                      expr   lq median   uq
##    EKF_one_correction_step  437    495  514
##  EKF_more_correction_step  904    920  927
##                       SMA 3073   3102 3173
##                       GMA  982   1035 1066
```

```
##                       UKF 3583    3615 3631
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##    EKF_one_correction_step  288    289  295
##  EKF_more_correction_step  305    310  325
##                        SMA  862    920  925
##                        GMA  414    424  425
##                        UKF 1995   1998 2015
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##    EKF_one_correction_step  206    206  214
##  EKF_more_correction_step  411    429  440
##                        SMA 1091   1102 1234
##                        GMA  331    333  335
##                        UKF 1411   1416 1427
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##                       expr   lq median   uq
##    EKF_one_correction_step  387    407  485
##  EKF_more_correction_step  879    919  979
##                        SMA 4238   4529 5440
##                        GMA 1078   1083 1085
##                        UKF 4795   4810 4847
```

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