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 = 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))
```

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

Warning in ddhazard(formula = Surv(tstart, tstop, event) ~ . - id, data = sims
$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 80.9   80.9 80.9
EKF_more_correction_step 157.5 157.5 157.5
SMA 212.9 212.9 212.9
GMA 322.1 322.1 322.1
UKF 356.2 356.2 356.2

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(n, p) = (1000, 5). Units is 'milliseconds'
expr lq median uq
EKF_one_correction_step 279   279 279
EKF_more_correction_step 772   772 772
SMA 702   702 702
GMA 399   399 399
UKF 592   592 592

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

(n, p) = (10000, 5). Units is 'milliseconds'
expr   lq median   uq
EKF_one_correction_step 491   491 491
EKF_more_correction_step 1234   1234 1234
SMA 2571   2571 2571
```

```
##                             GMA  970     970  970
##                             UKF 2645    2645 2645

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## (n, p) = (250, 10). Units is 'milliseconds'
##                         expr  lq median  uq
##    EKF_one_correction_step 139     139 139
##  EKF_more_correction_step 296     296 296
##                         SMA 466     466 466
##                         GMA 573     573 573
##                         UKF 964     964 964

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## (n, p) = (1000, 10). Units is 'milliseconds'
##                         expr  lq median  uq
##    EKF_one_correction_step 156     156 156
##  EKF_more_correction_step 365     365 365
##                         SMA 586     586 586
##                         GMA 281     281 281
##                         UKF 855     855 855

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## (n, p) = (10000, 10). Units is 'milliseconds'
##                         expr   lq median   uq
##    EKF_one_correction_step 573     573  573
##  EKF_more_correction_step 1373    1373 1373
##                         SMA 5378    5378 5378
##                         GMA 1208    1208 1208
```

```
##                           UKF 4774    4774 4774
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## (n, p) = (250, 15). Units is 'milliseconds'
##                         expr   lq median   uq
##   EKF_one_correction_step  337    337  337
##  EKF_more_correction_step  383    383  383
##                       SMA 1346   1346 1346
##                       GMA  630    630  630
##                       UKF 2380   2380 2380

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## (n, p) = (1000, 15). Units is 'milliseconds'
##                         expr   lq median   uq
##   EKF_one_correction_step  233    233  233
##  EKF_more_correction_step  517    517  517
##                       SMA 1044   1044 1044
##                       GMA  429    429  429
##                       UKF 1695   1695 1695

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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  522    522  522
##  EKF_more_correction_step 1301   1301 1301
##                       SMA 4663   4663 4663
##                       GMA 1252   1252 1252
##                       UKF 5819   5819 5819
```

Session info

- R version 3.5.1 (2018-07-02), `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 1.4-6, survival 2.42-3

- Loaded via a namespace (and not attached): backports 1.1.2, boot 1.3-20, compiler 3.5.1, digest 0.6.15, evaluate 0.10.1, grid 3.5.1, htmltools 0.3.6, knitr 1.20, lattice 0.20-35, magrittr 1.5, Matrix 1.2-14, parallel 3.5.1, Rcpp 1.0.0, rmarkdown 1.10, rprojroot 1.3-2, splines 3.5.1, stringi 1.1.7, stringr 1.3.0, tools 3.5.1, yaml 2.1.18