

speedtest

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2017-07-08

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 = 5
))

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

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

cat("\n\n")

invisible()
}

```

Test

```

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))
```

```
## (n, p) = (250, 5). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 20.2   20.6 22.5  a
## EKF_more_correction_step 33.5   34.4 43.9  a
##      SMA 83.3   86.2 91.2  a
##      GMA 38.8   40.7 40.8  a
##      UKF 77.7   82.1 84.6  a
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 32.0   36.2 36.3  a
## EKF_more_correction_step 52.4   56.0 59.9  bc
##      SMA 60.4   63.6 66.5  c
##      GMA 50.6   51.1 51.8  ab
##      UKF 102.8  103.2 104.6  d
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 150    163 244  a
## EKF_more_correction_step 315    381 430  b
##      SMA 502    565 579  c
##      GMA 205    209 214  a
##      UKF 559    581 651  c
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 41.3   45.2 53.5  a
## EKF_more_correction_step 75.1   76.5 84.8  b
##      SMA 139.9  141.7 154.5  c
##      GMA 68.3   69.0 69.8  b
##      UKF 332.8  342.1 349.6  d
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 37.4   38.6 39.5  a
## EKF_more_correction_step 53.8   54.2 54.8  b
##      SMA 115.9  115.9 120.0  c
##      GMA 49.9   55.6 55.6  b
##      UKF 215.2  215.3 217.5  d
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step 300    304 314  a
## EKF_more_correction_step 369    372 382  b
##      SMA 770    777 785  c
##      GMA 355    363 369  ab
```

```

##          UKF 1054   1063 1082    d
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step  95.9   104.2 104.4 a
## EKF_more_correction_step  82.1    85.4  88.6 a
##          SMA 179.5   184.9 184.9 b
##          GMA  80.5    81.0  82.2 a
##          UKF 442.5   442.7 447.9 c
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step  81.8    86.4  90 a
## EKF_more_correction_step 150.2   154.1 158 b
##          SMA 338.4   391.7 398 c
##          GMA 116.3   121.6 131 ab
##          UKF 555.4   556.8 610 d
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##      expr    lq median    uq cld
## EKF_one_correction_step  248    343  345 a
## EKF_more_correction_step  454    586  587 b
##          SMA  992   1025 1036 c
##          GMA  357    437  447 a
##          UKF 1850   1932 1954 d

```

Session info

- R version 3.4.0 (2017-04-21), x86_64-w64-mingw32
- Locale: LC_COLLATE=English_United Kingdom.1252, LC_CTYPE=English_United Kingdom.1252, LC_MONETARY=English_United Kingdom.1252, LC_NUMERIC=C, LC_TIME=English_United Kingdom.1252
- Running under: Windows 10 x64 (build 15063)
- Matrix products: default
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: dynamichazard 0.3.4, microbenchmark 1.4-2.1, survival 2.41-3
- Loaded via a namespace (and not attached): backports 1.1.0, boot 1.3-19, codetools 0.2-15, colorspace 1.3-2, compiler 3.4.0, data.table 1.10.4, digest 0.6.12, evaluate 0.10, ggplot2 2.2.1, grid 3.4.0, gtable 0.2.0, htmltools 0.3.6, knitr 1.16, lattice 0.20-35, lazyeval 0.2.0, magrittr 1.5, MASS 7.3-47, Matrix 1.2-9, multcomp 1.4-6, munsell 0.4.3, mvtnorm 1.0-6, plyr 1.8.4, Rcpp 0.12.11, rlang 0.1.1, rmarkdown 1.5, rprojroot 1.2, sandwich 2.3-4, scales 0.4.1, speedglm 0.3-2, splines 3.4.0, stringi 1.1.5, stringr 1.2.0, TH.data 1.0-8, tibble 1.3.3, tools 3.4.0, yaml 2.1.14, zoo 1.8-0