

speedtest

Benjamin Christoffersen

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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 = .25, x_mean = 0,
       beta_start = runif(p, -1.5, 1.5),
       intercept_start = -4, sds = c(.1, rep(.25, p)),
       tstart_sampl_func = function(t0, t_max)
         max(0, runif(1, -t_max, t_max - 1L)))
}

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 37.0   39.5  39.6  a
## EKF_more_correction_step 57.4   59.6  63.0  a
##      SMA 36.6   37.7  37.9  a
##      GMA 42.6   43.7  43.9  a
##      UKF 164.9  166.8 168.5  a
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##      expr      lq median      uq cld
## EKF_one_correction_step 56.7   63.3 153.4  a
## EKF_more_correction_step 98.4  103.7 104.4  a
##      SMA 100.2  113.5 115.8  a
##      GMA 74.4   74.7  86.4  a
##      UKF 190.5  191.6 202.7  b
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##      expr      lq median      uq cld
## EKF_one_correction_step 547    559  654  a
## EKF_more_correction_step 872    892  899  b
##      SMA 1594   1637 1640   d
##      GMA 763    779  789  ab
##      UKF 1306   1351 1356   c
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##      expr      lq median      uq cld
## EKF_one_correction_step 39.8   39.8  40.1  a
## EKF_more_correction_step 82.0   82.6  89.6   c
##      SMA 46.9   47.3  54.5  ab
##      GMA 59.2   60.9  61.0   b
##      UKF 459.7  460.6 464.4   d
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##      expr      lq median      uq cld
## EKF_one_correction_step 74.5   76.7  78.8  a
## EKF_more_correction_step 159.2  161.6 181.8  bc
##      SMA 151.5  165.3 179.4   c
##      GMA 115.4  121.1 124.0  ab
##      UKF 448.7  455.8 460.1   d
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##      expr      lq median      uq cld
## EKF_one_correction_step 807    946  947  a
## EKF_more_correction_step 1170   1170 1171  a
##      SMA 3931   4103 4237   c
##      GMA 1101   1114 1129  a
##      UKF 3162   3170 3185  b
```

```
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##      expr    lq median    uq  cld
## EKF_one_correction_step 187.2  187.9 206.1   c
## EKF_more_correction_step 115.5  118.5 120.6   b
##      SMA   61.9   62.7  63.4  a
##      GMA   80.4   85.8  90.7  ab
##      UKF  665.9  702.7 707.9   d
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##      expr    lq median    uq  cld
## EKF_one_correction_step  274    281  284  a
## EKF_more_correction_step  246    249  278  a
##      SMA 1315   1370 1434   c
##      GMA  321    332  337  ab
##      UKF  811    814  821  bc
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##      expr    lq median    uq  cld
## EKF_one_correction_step 1070   1167 1168   a
## EKF_more_correction_step 1650   1651 1652   a
##      SMA 7285   7939 8058   b
##      GMA 1669   1673 1710   a
##      UKF 6434   6741 6781   b
```

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 14393)
- Matrix products: default
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: dynamichazard 0.3.1, 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