speedtest

Benjamin Christoffersen

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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(
        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

```
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
##   EKF_one_correction_step  51.5   51.6  55.6
##  EKF_more_correction_step  98.1  104.7 106.0
##                       SMA 151.5  160.8 164.3
##                       GMA 155.9  169.2 170.8
##                       UKF 247.1  255.1 261.1
##
##
## (n, p) = (1000, 5). Units is 'milliseconds'
##                      expr  lq median  uq
##   EKF_one_correction_step 171    189 196
##  EKF_more_correction_step 514    514 534
##                       SMA 473    493 515
##                       GMA 263    264 269
##                       UKF 463    467 468
##
##
## (n, p) = (10000, 5). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  360    361  369
##  EKF_more_correction_step  854    855  859
##                       SMA 1980   1982 2008
##                       GMA  786    796  798
##                       UKF 2192   2201 2266
##
##
## (n, p) = (250, 10). Units is 'milliseconds'
##                      expr    lq median    uq
##   EKF_one_correction_step  81.8   90.1  92.9
##  EKF_more_correction_step 199.7  202.0 211.5
##                       SMA 359.4  367.1 368.4
##                       GMA 311.7  314.6 318.6
##                       UKF 779.9  780.1 781.1
##
##
## (n, p) = (1000, 10). Units is 'milliseconds'
##                      expr  lq median  uq
##   EKF_one_correction_step 130    131 131
##  EKF_more_correction_step 287    294 295
##                       SMA 435    458 464
##                       GMA 184    185 192
##                       UKF 708    716 722
##
##
## (n, p) = (10000, 10). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  473    497  522
##  EKF_more_correction_step  916    919  925
##                       SMA 2685   3006 3038
##                       GMA 1010   1015 1127
##                       UKF 3699   3720 3728
##
##
## (n, p) = (250, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  221    223  246
##  EKF_more_correction_step  274    277  288
##                       SMA  793    829  883
##                       GMA  346    377  381
##                       UKF 1918   2007 2192
##
##
## (n, p) = (1000, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  192    193  196
##  EKF_more_correction_step  433    441  442
##                       SMA  965   1012 1049
##                       GMA  301    311  313
##                       UKF 1404   1419 1438
##
##
## (n, p) = (10000, 15). Units is 'milliseconds'
##                      expr   lq median   uq
##   EKF_one_correction_step  380    387  443
##  EKF_more_correction_step  858    880  946
##                       SMA 3596   3600 3657
##                       GMA 1023   1029 1030
##                       UKF 4642   4670 4695
```

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