

speedtest

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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 = 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 = 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

```

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  67.9   67.9  67.9
## EKF_more_correction_step 132.3  132.3 132.3
##           SMA 210.7  210.7 210.7
##           GMA 191.7  191.7 191.7
##           UKF 325.1  325.1 325.1

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## (n, p) = (1000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step  220    220 220
## EKF_more_correction_step 601    601 601
##           SMA 656    656 656
##           GMA 292    292 292
##           UKF 543    543 543

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## (n, p) = (10000, 5). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step  433    433 433
## EKF_more_correction_step 981    981 981
##           SMA 2476   2476 2476
```

```

##          GMA  913    913  913
##          UKF 2820   2820 2820

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## (n, p) = (250, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 116    116 116
## EKF_more_correction_step 252    252 252
##          SMA 480    480 480
##          GMA 385    385 385
##          UKF 962    962 962

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## (n, p) = (1000, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 149    149 149
## EKF_more_correction_step 342    342 342
##          SMA 889    889 889
##          GMA 219    219 219
##          UKF 892    892 892

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

## (n, p) = (10000, 10). Units is 'milliseconds'
##          expr  lq median  uq
## EKF_one_correction_step 454    454 454
## EKF_more_correction_step 1024   1024 1024
##          SMA 3356   3356 3356
##          GMA 1081   1081 1081

```

```

##                                UKF 4376   4376 4376

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## (n, p) = (250, 15). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 298    298 298
## EKF_more_correction_step 333    333 333
##           SMA 1011    1011 1011
##           GMA 457    457 457
##           UKF 2308    2308 2308

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## (n, p) = (1000, 15). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 211    211 211
## EKF_more_correction_step 471    471 471
##           SMA 1016    1016 1016
##           GMA 353    353 353
##           UKF 1607    1607 1607

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## (n, p) = (10000, 15). Units is 'milliseconds'
##           expr    lq median    uq
## EKF_one_correction_step 499    499 499
## EKF_more_correction_step 929    929 929
##           SMA 4336    4336 4336
##           GMA 1245    1245 1245
##           UKF 5281    5281 5281

```

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 17134)
- Matrix products: default
- Base packages: base, datasets, graphics, grDevices, methods, stats, utils
- Other packages: dynamichazard 0.6.0, 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 0.12.18, 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