1 Obsah cyklu k výpočtu osy jízdního pásu

```
qSQL<-paste("SELECT fcd_okruh_clean.smer,
       ST_X(fcd_okruh_clean.\"the_GeomKrovak\"),
       ST_Y(fcd_okruh_clean.\"the_GeomKrovak\")FROM fcd_okruh_clean WHERE
       fcd_okruh_clean.smer<", spravnysmer[j]+10," and fcd_okruh_clean.smer>",
       spravnysmer[j]-10, " and ST_DWithin(fcd_okruh_clean.\"the_GeomKrovak\",
       ST_GeomFromText('POINT(",xx,"",yy,")', 102067),",vzd,")", sep="")
rs <- dbSendQuery(con, qSQL)
df <- fetch(rs, n = -1)
dbClearResult(rs)

lokalita$x[j]<-mean(df$st_x)
lokalita$y[j]<-mean(df$st_y)
lokalita$smer[j]<-spravnysmer[j]

if ( abs(((spravnysmer[1]-predchozismer)+180)%%360-180) < abs(((spravnysmer[2]-
       predchozismer)+180)%%360-180))
           {if (j==1) idsmeru<-1
            else idsmeru<-2}
else
           {if (j==1)idsmeru<-2
            else idsmeru<-1}

qSQL<-paste("INSERT INTO bodylinie( idsmeru,x,y, smer)
       VALUES(",idsmeru,",",lokalita$x[j],
       ",",lokalita$y[j],",",spravnysmer[j],");")
dbSendQuery(con, qSQL)
```

2 Tvorba rastru

```
library(RPostgreSQL)
library(plyr)
m <- dbDriver("PostgreSQL")
con <- dbConnect(m, user="postgres", password="kelib", dbname="FCD")
dbSendQuery(con, "DELETE FROM mriz;")

pocetbodu <- 0
prumernarychlost <- 0
maxrychlost <- 0
rozptylrychlosti <- 0
hlavnismer <- 0
rozptylsmeru <- 0
pocetstani <- 0
pocetnakladnichvozidel <- 0

vzd <-2
krok <- 4
xx <- -743570
yy <- -1044840
pocitadlo <- 0
posunx <- 1:100
posuny <- 1:100

for (i in posuny)
{
   for (j in posunx)
   {
      qSQL<-paste("SELECT fcd_nusle_clean.lat, fcd_nusle_clean.long,
      fcd_nusle_clean.rychlost, fcd_nusle_clean.smer,
      ST_AsText(fcd_nusle_clean.\"the_GeomKrovak\") FROM fcd_nusle_clean
              WHERE ST_DWithin( fcd_nusle_clean.\"the_GeomKrovak\" ,
      ST_GeomFromText('POINT(",xx," ",yy,")',102067) , ",vzd,") ", sep="")
            rs <- dbSendQuery(con, qSQL)
            df <- fetch(rs, n = -1)

            pocitadlo <- pocitadlo + 1

            if (length(df$smer)==0)
            {
              qSQL<-paste("INSERT INTO mriz (idbodu, x, y, pocetbodu) VALUES
      (",pocitadlo, ",",xx, ",",yy,",",0,");")
              dbSendQuery(con, qSQL)
            }
            else
            {
              pocetbodu <- length(df$smer)
              prumernarychlost <- mean(df$rychlost)
              maxrychlost <- max(df$rychlost)

              odchylkarychlosti <- sd(df$rychlost)
              if ( is.na(odchylkarychlosti)==TRUE )
              {
                odchylkarychlosti<-0
              }

              hlavnismer <- max(hist(df$smer,360, plot = F)$counts)
```

```
                odchylkasmeru <- sd(df$smer)
                if ( is.na(odchylkasmeru)==TRUE )
                {
                  odchylkasmeru<-0
                }

                qSQL<-paste("INSERT INTO mriz (idbodu, x, y,pocetbodu,
        prumernarychlost, maxrychlost, odchylkarychlosti, hlavnismer, odchylkasmeru,
        pocetstani, pocetnakladnichvozidel) VALUES (",pocitadlo, ",",xx,
        ",",yy,",",pocetbodu,",",prumernarychlost,",
        ",maxrychlost,",",odchylkarychlosti,",",hlavnismer,",",odchylkasmeru,",",poc
        etstani,",",pocetnakladnichvozidel,");")
                dbSendQuery(con, qSQL)
              }

              xx<- xx + krok

              if (j==max(posunx))
              {
                xx<- -743570
              }
          }
          yy <- yy - krok
}
qSQL<-paste("UPDATE mriz SET \"the_GeomKrovak\"=
        GeomFromEWKT('SRID=102067;POLYGON(('||mriz.x-2||' '||mriz.y-2||','||mriz.x-
        2||' '||mriz.y+2||','||mriz.x+2||' '||mriz.y+2||','||mriz.x+2||' '||mriz.y-
        2||','||mriz.x-2||' '||mriz.y-2||'))');")
dbSendQuery(con, qSQL)
dbDisconnect(con)
```

3 Linie rychlostní komunikace

```
library(RPostgreSQL)
m <- dbDriver("PostgreSQL")
con <- dbConnect(m, user="postgres", password="kelib", dbname="FCD")

dbSendQuery(con, "DELETE FROM bodylinie;")
dbSendQuery(con, "DELETE FROM bodysite;")

vzd<-30
krok<- 50
rozsm<-10
xx<- -752030.71
yy<-  -1038660.17
sm<- 110
body<-1:130
spravnysmer<-array(2)
lokalita<-list()

pocatekprogramu<-TRUE
idsmeru<-0

smerupraven<-0
uzelsite <- FALSE


for (i in body){
       qSQL<-paste("SELECT fcd_okruh_clean.lat, fcd_okruh_clean.long,
       fcd_okruh_clean.rychlost, fcd_okruh_clean.smer,
       ST_AsText(fcd_okruh_clean.\"the_GeomKrovak\")FROM fcd_okruh_clean
              WHERE
       ST_DWithin(fcd_okruh_clean.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ,"
       ", yy,")', 102067),", vzd,")", sep="")
       rs <- dbSendQuery(con, qSQL)
       df <- fetch(rs, n = -1)

       dbClearResult(rs)

       spravnysmer[1]<-hist(df$smer,360, plot = F)$mids[which.max(hist(df$smer,360,
       plot = F)$density)]
       vyber<-!(df$smer>(spravnysmer[1]-rozsm) & df$smer<(spravnysmer[1]+rozsm))
       spravnysmer[2]<-hist(df$smer[vyber],360, plot =
       F)$mids[which.max(hist(df$smer[vyber],360, plot = F)$density)]

       smerupraven<-df$smer
       smerupraven[smerupraven>(spravnysmer[1]-rozsm) &
       smerupraven<(spravnysmer[1]+rozsm)]<-NA
       smerupraven[smerupraven>(spravnysmer[2]-rozsm) &
       smerupraven<(spravnysmer[2]+rozsm)]<-NA

       if (max(hist(smerupraven,360, plot = F)$counts)>20)
         {
           uzelsite <- TRUE
         }

       if  (pocatekprogramu == TRUE)
       {
           predchozismer <- spravnysmer[2]
           pocatekprogramu <- FALSE
```

```
}

for (j in 1:2) {
  qSQL<-paste("SELECT fcd_okruh_clean.lat, fcd_okruh_clean.long,
fcd_okruh_clean.rychlost, fcd_okruh_clean.smer,
ST_X(fcd_okruh_clean.\"the_GeomKrovak\"),
ST_Y(fcd_okruh_clean.\"the_GeomKrovak\")FROM fcd_okruh_clean
  WHERE fcd_okruh_clean.smer<", spravnysmer[j]+rozsm," and
fcd_okruh_clean.smer>", spravnysmer[j]-rozsm, "
       and ST_DWithin(fcd_okruh_clean.\"the_GeomKrovak\",
ST_GeomFromText('POINT(",xx ," ", yy,")', 102067) ,", vzd,")", sep="")
  rs <- dbSendQuery(con, qSQL)
  df <- fetch(rs, n = -1)
  dbClearResult(rs)

  lokalita$x[j]<-mean(df$st_x)
  lokalita$y[j]<-mean(df$st_y)

  if ( abs(((spravnysmer[1]-predchozismer)+180)%%360-180) <
abs(((spravnysmer[2]-predchozismer)+180)%%360-180))
    {
      if (j==1)
      {
        idsmeru<-1
      }
      else
      {
        idsmeru<-2
      }
    }
  else
    {
      if (j==1)
      {
        idsmeru<-2
      }
      else
      {
        idsmeru<-1
      }
    }

  qSQL<-paste("INSERT INTO bodylinie(idbodu, idsmeru,x,y, smer)
VALUES(",i,",",idsmeru,",",lokalita$x[j],
",",lokalita$y[j],",",spravnysmer[j],");")
  dbSendQuery(con, qSQL)
}

  xx<-mean (lokalita$x)
  yy<-mean (lokalita$y)
  if (uzelsite == TRUE)
  {

      qSQL<-paste("INSERT INTO bodysite (idbodu,x,y) VALUES(",i,",",xx,
",",yy,");")
      dbSendQuery(con, qSQL)
}
```

```
        qSQL<-paste("INSERT INTO bodylinie(idbodu, idsmeru,x,y)
      VALUES(",i,",",0,",",xx, ",",yy,");")
        dbSendQuery(con, qSQL)

        if (abs(((spravnysmer[1]- sm) + 180) %% 360 - 180)< abs(((spravnysmer[2]-
      sm) + 180) %% 360 - 180))
            {sm<-spravnysmer[1]}
        else
            {sm<-spravnysmer[2]}

        xx<- xx + krok * cos((360-sm+90-7.5)*pi/180)
        yy<- yy + krok * sin((360-sm+90-7.5)*pi/180)
        predchozismer<-sm

        uzelsite <- FALSE

}

qSQL<-paste("UPDATE bodylinie SET \"the_GeomKrovak\"=
      GeomFromEWKT('SRID=102067;POINT(' || bodylinie.x  || ' ' || bodylinie.y ||
      ')');")
dbSendQuery(con, qSQL)

qSQL<-paste("UPDATE bodysite SET \"the_GeomKrovak\"=
      GeomFromEWKT('SRID=102067;POINT(' || bodysite.x  || ' ' || bodysite.y ||
      ')');")
dbSendQuery(con, qSQL)

dbDisconnect(con)
```

4 Síť pomocí detekce křížení

```
library(RPostgreSQL)
m <- dbDriver("PostgreSQL")
con <- dbConnect(m, user="postgres", password="kelib", dbname="FCD")

dbSendQuery(con, "DELETE FROM bodylinie2;")

qSQL<-paste("SELECT ST_X(pocatecnibody.\"geom\"), ST_Y(pocatecnibody.\"geom\"),
      pocatecnibody.id FROM pocatecnibody", sep="")
rs <- dbSendQuery(con, qSQL)
pocatecnibody <- fetch(rs, n = -1)
dbClearResult(rs)

vzd<-20
vzd2<-vzd
krok<- 40
rozsm<-10
body<-1:10000

krizeni <- list()
smerykrizeni <- list()
idkrizeni <- 0
krizeni$xx <- 0
krizeni$yy <- 0
zacykleni <- 0

idlinie <- 0

xx<- pocatecnibody$st_x[1]
yy<- pocatecnibody$st_y[1]
sm <-180

for (i in body)
{
      df = data.frame()
      qSQL<-paste("SELECT ST_X(fcd_nusle_clean.\"the_GeomKrovak\"),
      ST_Y(fcd_nusle_clean.\"the_GeomKrovak\"), fcd_nusle_clean.smer FROM
      fcd_nusle_clean
            WHERE
      ST_DWithin(fcd_nusle_clean.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ,"
      ", yy,")', 102067),", vzd,")", sep="")
      rs <- dbSendQuery(con, qSQL)
      df <- fetch(rs, n = -1)
      dbClearResult(rs)

      df2 = data.frame()
      qSQL<-paste("SELECT ST_X(bodylinie2.\"the_GeomKrovak\"),
      ST_Y(bodylinie2.\"the_GeomKrovak\") FROM bodylinie2
            WHERE
      ST_DWithin(bodylinie2.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ," ",
      yy,")', 102067),", vzd,")", sep="")
      rs <- dbSendQuery(con, qSQL)
      df2 <- fetch(rs, n = -1)
      dbClearResult(rs)
      df3 = data.frame()
      qSQL<-paste("SELECT bodylinie2.idkrizeni FROM bodylinie2
```

```
          WHERE bodylinie2.idkrizeni IS NOT NULL AND
ST_DWithin(bodylinie2.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ," ",
yy,")', 102067),", vzd2,")", sep="")
rs <- dbSendQuery(con, qSQL)
df3 <- fetch(rs, n = -1)
dbClearResult(rs)
l<-1
if (  dim(df3)[1] > 1 ) df3$idkrizeni[1]<-
df3$idkrizeni[sample(1:dim(df3)[1],1)]


if (  dim(df3)[1] > 0 )
{
          if (idkrizeni == df3$idkrizeni[l] || idkrizeni2 ==
df3$idkrizeni[l])
          {

                if (krizeni$pocitadlo[df3$idkrizeni[l]] == 0)
                {
                        idkrizeni2 <-df3$idkrizeni[l]-1
                        xx <-krizeni$xx[idkrizeni2]
                        yy <-krizeni$yy[idkrizeni2]

                }
                else if (is.na(smerykrizeni$d[df3$idkrizeni[l]]) == TRUE &&
krizeni$pocetsmeru[df3$idkrizeni[l]] == 3 &&
krizeni$pocitadlo[df3$idkrizeni[l]] == 1 )
                {
                        krizeni$pocitadlo[df3$idkrizeni[l]] <- 0
                        idkrizeni2 <-df3$idkrizeni[l]-1
                        xx <-krizeni$xx[idkrizeni2]
                        yy <-krizeni$yy[idkrizeni2]

                }
                else
                {
                        xx <-krizeni$xx[df3$idkrizeni[l]]
                        yy <-krizeni$yy[df3$idkrizeni[l]]


                        if ( krizeni$pocitadlo[df3$idkrizeni[l]] == 3)sm<-
smerykrizeni$b[df3$idkrizeni[l]]
                        if ( krizeni$pocitadlo[df3$idkrizeni[l]] == 2)sm<-
smerykrizeni$c[df3$idkrizeni[l]]
                        if ( krizeni$pocitadlo[df3$idkrizeni[l]] == 1)sm<-
smerykrizeni$d[df3$idkrizeni[l]]

                        krizeni$pocitadlo[df3$idkrizeni[l]] <-
krizeni$pocitadlo[df3$idkrizeni[l]] - 1

                        idlinie <- idlinie + 1

                        xx<- xx + (krok*2) * cos((360-sm+90)*pi/180)
                        yy<- yy + (krok*2) * sin((360-sm+90)*pi/180)

                }
          }
          else
          {
```

```
                xx <-krizeni$xx[idkrizeni]
                yy <-krizeni$yy[idkrizeni]

          }
}
else if (dim(df2)[1]>3 || dim(df)[1]<30)
{
          xx <-krizeni$xx[idkrizeni]
          yy <-krizeni$yy[idkrizeni]
}
else
{
          xx <- mean(df$st_x)
          yy <- mean(df$st_y)

          require(graphics)
          d <- density(df$smer)
          ts_y <- ts(d$y)
          require(pastecs)
          tp<-turnpoints(ts_y)
          keep <- 1:((tp$nturns+1)/2)*2
          if (tp$firstispeak == TRUE) keep <- keep - 1
          peaks <- tp$tppos[keep]

          for (j in 1:4)
          {
                  if (is.na(sort(d$y[peaks][d$y[peaks]>0.002],
decreasing=TRUE)[j])==FALSE ) &&  count(df$smer[df$smer==round(d$x[d$y ==
sort( d$y[peaks][d$y[peaks]>0.002], decreasing=TRUE)[j]])]  > 50 ))
                  {
                        spravnysmer[j] <- round(d$x[d$y == sort(
d$y[peaks][d$y[peaks]>0.002], decreasing=TRUE)[j] ] )
                  }
          }

          if (length(spravnysmer) >2)
          {
                        idkrizeni <- idkrizeni + 1
                        idkrizeni2 <- idkrizeni
                        krizeni$xx[idkrizeni] <- xx
                        krizeni$yy[idkrizeni] <- yy
                        krizeni$pocetsmeru[idkrizeni] <-
length(spravnysmer)
                        krizeni$pocitadlo[idkrizeni] <-
krizeni$pocetsmeru[idkrizeni]-1
                        smerykrizeni$a[idkrizeni] <- spravnysmer[1]
                        smerykrizeni$b[idkrizeni] <- spravnysmer[2]
                        smerykrizeni$c[idkrizeni] <- spravnysmer[3]
                        smerykrizeni$d[idkrizeni] <- spravnysmer[4]


                        qSQL<-paste("INSERT INTO bodylinie2
(idbodu,x,y,idlinie,idkrizeni)
VALUES(",i,",",xx,",",yy,",",idlinie,",",idkrizeni,");")
                        dbSendQuery(con, qSQL)
                        print(spravnysmer)
                        sm <- smerykrizeni$a[idkrizeni]
                        xx<- xx + (krok*2) * cos((360-sm+90)*pi/180)
                        yy<- yy + (krok*2) * sin((360-sm+90)*pi/180)
```

```
                                idlinie <- idlinie + 1


                        }
                        else
                        {

                                if (length(spravnysmer)==1)
                                {
                                        sm<-spravnysmer[1]
                                }
                                else
                                {
                                        if (abs((spravnysmer[1] - sm + 180) %% 360 - 180)<
        abs((spravnysmer[2]- sm + 180) %% 360 - 180))
                                        {
                                                sm<-spravnysmer[1]
                                        }
                                        else
                                        {
                                                sm<-spravnysmer[2]
                                        }
                                }
                                qSQL<-paste("INSERT INTO bodylinie2 (idbodu,x,y,idlinie)
        VALUES(",i,",",xx,",",yy,",",idlinie,");")
                                dbSendQuery(con, qSQL)


                                xx<- xx + (krok) * cos((360-sm+90)*pi/180)
                                yy<- yy + (krok) * sin((360-sm+90)*pi/180)
                        }
                        qSQL<-paste("UPDATE bodylinie2 SET \"the_GeomKrovak\"=
        GeomFromEWKT('SRID=102067;POINT(' || bodylinie2.x  || ' ' || bodylinie2.y ||
        ')');")
                        dbSendQuery(con, qSQL)
        }
        print(krizeni)
}
dbDisconnect(con)
```

5 Stanovení počtu pruhů

```
library(RPostgreSQL)
m <- dbDriver("PostgreSQL")
con <- dbConnect(m, user="postgres", password="kelib", dbname="FCD")

vzd <- 30

qSQL<-paste("SELECT idbodu, idsmeru, smer, ST_X(\"the_GeomKrovak\"),
       ST_Y(\"the_GeomKrovak\")
           FROM bodylinie WHERE bodylinie.idbodu = 33 ")
rs <- dbSendQuery(con, qSQL)
dbb <- fetch(rs, n = -1)
dbClearResult(rs)

#Osobni auta
qSQL<-paste("SELECT ST_X(fcd_okruh_clean.\"the_GeomKrovak\"),
       ST_Y(fcd_okruh_clean.\"the_GeomKrovak\")
    FROM fcd_okruh_clean
    WHERE (smer = ",dbb$smer[1]," )and vozidlo = 'OA' and
       ST_DWithin(fcd_okruh_clean.\"the_GeomKrovak\",
       ST_GeomFromText('POINT(",dbb$st_x[3] ," ", dbb$st_y[3],")', 102067) ,",
       vzd,")", sep="")
rs <- dbSendQuery(con, qSQL)
oa <- fetch(rs, n = -1)
dbClearResult(rs)

#Nakladni auta
qSQL<-paste("SELECT ST_X(fcd_okruh_clean.\"the_GeomKrovak\"),
       ST_Y(fcd_okruh_clean.\"the_GeomKrovak\")
    FROM fcd_okruh_clean
    WHERE (smer = ",dbb$smer[1]," )and vozidlo = 'NA' and
       ST_DWithin(fcd_okruh_clean.\"the_GeomKrovak\",
       ST_GeomFromText('POINT(",dbb$st_x[3] ," ", dbb$st_y[3],")', 102067) ,",
       vzd,")", sep="")
rs <- dbSendQuery(con, qSQL)
na <- fetch(rs, n = -1)
dbClearResult(rs)

uhel <- dbb$smer[1]

for (i in 1:(length(oa$st_x))  )
{
    oa$souradnice_x[i] <- cos(uhel)*(oa$st_x[i]-dbb$st_x[3]) +
       sin(uhel)*(oa$st_y[i]-dbb$st_y[3])
}


for (i in 1:(length(na$st_x))  )
{
    na$souradnice_x[i] <- cos(uhel)*(na$st_x[i]-dbb$st_x[3]) +
       sin(uhel)*(na$st_y[i]-dbb$st_y[3])
}

require(graphics)
d1 <- density(oa$souradnice_x)
d2 <- density(na$souradnice_x)
ts_y1 <- ts(d1$y)
ts_y2 <- ts(d2$y)
```

```
require(pastecs)
tp1<-turnpoints(ts_y1)
tp2<-turnpoints(ts_y2)
keep1 <- 1:((tp1$nturns+1) / 2) * 2
keep2 <- 1:((tp2$nturns+1) / 2) * 2
if (tp1$firstispeak == TRUE) keep1 <- keep1 - 1
if (tp2$firstispeak == TRUE) keep2 <- keep2 - 1
peaks1 <- tp1$tppos[keep1]
peaks2 <- tp2$tppos[keep2]
plot(d1,col='red')
points(d1$x[peaks1],d1$y[peaks1],col="red")
lines(d2)
points(d2$x[peaks2],d2$y[peaks2])

print(d1$x[peaks1])
print(d2$x[peaks2])

plot(density(oa$st_x ),col='red')
lines(density(na$st_x ))

dbDisconnect(con)
```

6 Síť z jednoduchých linií

```
library(RPostgreSQL)
m <- dbDriver("PostgreSQL")
con <- dbConnect(m, user="postgres", password="kelib", dbname="FCD")

dbSendQuery(con, "DELETE FROM bodylinie2;")

qSQL<-paste("SELECT ST_X(pocatecnibody.\"geom\"), ST_Y(pocatecnibody.\"geom\"),
      pocatecnibody.id FROM pocatecnibody", sep="")
rs <- dbSendQuery(con, qSQL)
pocatecnibody <- fetch(rs, n = -1)
dbClearResult(rs)

vzd<-20
krok<- 20
rozsm<-10
body<-1:500

krizeni <- list()
idkrizeni <- 0
krizeni$xx <- 0
krizeni$yy <- 0

for (opakovani in 1:10)
{
for (k in 1:dim(pocatecnibody)[1])
{
      xx<- pocatecnibody$st_x[k]
      yy<- pocatecnibody$st_y[k]

for (i in body)
{
      df = data.frame()
      qSQL<-paste("SELECT ST_X(fcd_nusle_clean.\"the_GeomKrovak\"),
      ST_Y(fcd_nusle_clean.\"the_GeomKrovak\"), fcd_nusle_clean.rychlost,
      fcd_nusle_clean.smer FROM fcd_nusle_clean
            WHERE
      ST_DWithin(fcd_nusle_clean.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ,"
      ", yy,")', 102067),", vzd,")", sep="")
      rs <- dbSendQuery(con, qSQL)
      df <- fetch(rs, n = -1)
      dbClearResult(rs)

      df2 = data.frame()
      qSQL<-paste("SELECT ST_X(bodylinie2.\"the_GeomKrovak\"),
      ST_Y(bodylinie2.\"the_GeomKrovak\") FROM bodylinie2
            WHERE
      ST_DWithin(bodylinie2.\"the_GeomKrovak\",ST_GeomFromText('POINT(",xx ," ",
      yy,")', 102067),", vzd,")", sep="")
      rs <- dbSendQuery(con, qSQL)
      df2 <- fetch(rs, n = -1)
      dbClearResult(rs)


      if (dim(df2)[1]>15)
      {
                break
```

```
}
else if (dim(df)[1]<5)
{
          break

}
else if (dim(df)[1]<10)
{
          sm<- (sm+180)%%360
          xx<- xx + (krok*2) * cos((360-sm+90)*pi/180)
          yy<- yy + (krok*2) * sin((360-sm+90)*pi/180)
}
else
{
          xx <- mean(df$st_x)
          yy <- mean(df$st_y)

          spravnysmer[1]<-hist(df$smer,360, plot =
F)$mids[which.max(hist(df$smer,360, plot = F)$density)]
          vyber<-!(df$smer>(spravnysmer[1]-rozsm) &
df$smer<(spravnysmer[1]+rozsm))
          if (length(vyber[vyber==TRUE])==0)
          {
                    spravnysmer[2]<-361
          }
          else
          {
                    spravnysmer[2]<-hist(df$smer[vyber],360, plot =
F)$mids[which.max(hist(df$smer[vyber],360, plot = F)$density)]
          }


                    if  (pocatekprogramu == TRUE)
                    {
                              sm <- spravnysmer[1]
                              pocatekprogramu <- FALSE
                    }


                    if (spravnysmer[2]==361)
                    {
                              sm<-spravnysmer[1]
                    }
                    else
                    {
                              if (abs((spravnysmer[1] - sm + 180) %% 360 - 180)<
abs((spravnysmer[2]- sm + 180) %% 360 - 180))
                              {
                                        sm<-spravnysmer[1]
                              }
                              else
                              {
                                        sm<-spravnysmer[2]
                              }
                    }

                    qSQL<-paste("INSERT INTO bodylinie2 (idbodu,x,y,idlinie)
VALUES(",i,",",xx,",",yy,",",k,");")
                    dbSendQuery(con, qSQL)
```

```
                        rand <- sample(c(-10,-5,0,5,10),1)
                        print(rand)
                        xx<- xx + (krok) * cos((360-sm+90+rand)*pi/180)
                        yy<- yy + (krok) * sin((360-sm+90+rand)*pi/180)

                qSQL<-paste("UPDATE bodylinie2 SET \"the_GeomKrovak\"=
        GeomFromEWKT('SRID=102067;POINT(' || bodylinie2.x  || ' ' || bodylinie2.y ||
        ')');")
                dbSendQuery(con, qSQL)
        }
}
}
}
dbDisconnect(con)
```