# Demonstration of CHAT Extraction and RQA

Let's import the new text file that the iPython Notebook produced and use the crqa library to build a recurrence plot of words.

```
setwd('~/Dropbox/example-cha-extract')
library(crqa)
```

```
## Warning: package 'crqa' was built under R version 3.1.3
```

```
## Loading required package: Matrix
## Loading required package: tseriesChaos
## Loading required package: deSolve
## Loading required package: fields
## Loading required package: spam
## Loading required package: grid
## Spam version 1.0-1 (2014-09-09) is loaded.
## Type 'help( Spam)' or 'demo( spam)' for a short introduction
## and overview of this package.
## Help for individual functions is also obtained by adding the
## suffix '.spam' to the function name, e.g. 'help( chol.spam)'.
##
## Attaching package: 'spam'
##
## The following objects are masked from 'package:base':
##
##     backsolve, forwardsolve
##
## Loading required package: maps
## Loading required package: plot3D
## Loading required package: pracma
##
## Attaching package: 'pracma'
##
## The following object is masked from 'package:deSolve':
##
##     rk4
##
## The following objects are masked from 'package:Matrix':
##
##     expm, lu, tril, triu
```

```
data = read.table('extractedWords.txt')
colnames(data) = c('speaker','word','id')
```

Now that we have our data in, let's choose the two speakers we want to plot on a CRP, then extract their respective time series of word identifiers.

```
speaker1 = 'INV'
speaker2 = 'PAR'
ts1 = data[data$speaker==speaker1,]$id # IDs from only INV
```

```
ts2 = data[data$speaker==speaker2,]$id # IDs from only PAR

crqaResults = crqa(ts1,ts2,1,1,1,.0001,F,2,2,0,F,F) # see Coco & Dale, Frontiers paper, for specs
RP = as.matrix(crqaResults$RP)
pointLocations = which(RP==1,arr.ind=T) # arr.ind = return (i,j) location of points
# plot these points
plot(pointLocations[,1],pointLocations[,2],xlab='Time (word) for time series 1',ylab='Time (word) for ti
```