

Statnet Instruction

Here are directions for downloading and installing the freeware “statnet” which is designed to estimate ERGMs, among other things. This runs within the freeware program “R” which you will have to download as well.

Installation. Downloading and installing the software is straightforward, and you can find directions at:

<https://statnet.csde.washington.edu/trac/wiki/Installation>.
(which also tells you how to install “R”).

If you would like a tutorial, you can find information at
<http://www.jstatsoft.org/v24/i09/paper>

Once you have “R”, then open it and at the cursor type:

```
>install.packages("statnet")
```

and then

```
>library("statnet")
```

Let's load the florentine marriage data:

```
> data("florentine")
```

To find out about the data, type

```
> summary(floamarriage)
```

Fitting ERGMs. Now, let us fit some simple ERGMs to these data. First, let us fit the Erdos-Renyi random graph, where only the number of links (edges) matter in determining the probability of the network. Type

```
> model1 <- ergm(floamarriage ~ edges)
```

To see the output type

```
> summary(model1)
```

Find the option that matches the coefficient you got for edges. Recall from lecture that this coefficient should be $\ln(p/(1-p))$, so what is p ? (the probability of a link)

Let us try a slightly richer ERGM, including the number of triangles (triads):

```
> model2 <- ergm(floamarriage ~ edges + triangles)
```

```
> summary(model2)
```

Once you start running more elaborate ERGMs, even this simple with small numbers of nodes, by chance, you might have some problems with convergence. Just as a check, run it again and see what how different the estimates are.

Find the option that matches the coefficient you got for triangles.

You can try some other variations, for instance including a count of 2-stars:

```
> model3 <- ergm(floamarriage ~ edges + triangles + kstar(2))  
> summary(model3)
```

To find more statistics that you can include in this package for estimating ERGMs see <http://www.jstatsoft.org/v24/i04/paper>