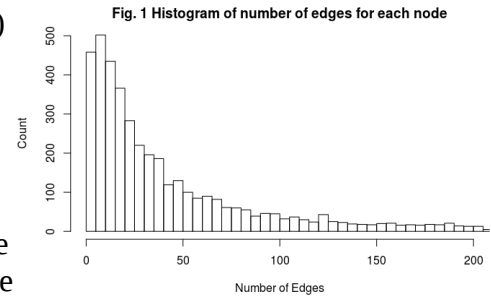


AC5

- Name of the dataset: ego-Facebook
- Description: Social circles from Facebook (anonymized)
- link: <http://snap.stanford.edu/data/egonets-Facebook.html> Download: facebook_combined.txt.gz (Description: Edges from all egonets combined)
- The number of nodes and edges in the graph/network, and any other interesting statistics you found.

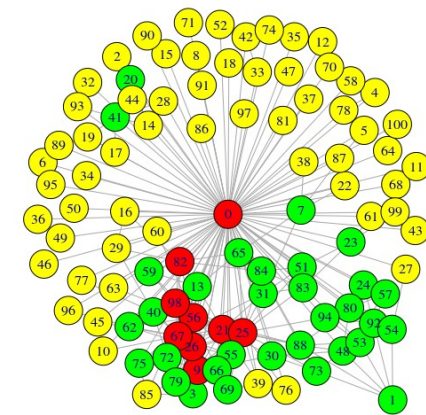
This data set have a total of 4039 nodes and 176466 edges in the network. The average of number of edges per nodes (the average degree of nodes) is 44.



- Visualization of the graph/network.

This dataset contains 4039 nodes. In my visualization study, I only selected a subset of the data contains the first 101 nodes (nodes ID from 0 to 100). I used igraph to perform such visualization. I highlighted the nodes with 5-9 edges as green color, nodes with more than 10 edges as red color and nodes with less than 5 edges as yellow color. As shown in Figure 2, there are 9 nodes containing more than 10 edges, and about 32 nodes containing 5-9 edges.

Fig. 2 Visualization of the network (1-100)



- Code used for analysis & visualization

```
library(igraph)
getwd()
dir()
# read file
a=read.csv(file="facebook_combined.txt", sep = " ")
network=graph.data.frame(a, directed = FALSE)
# number of edges for each node
edge=degree(network)
#total edge
total_edge=sum(edge)
# number of nodes
nodes=length(unique(unlist(a)))
# aveage edge/nodes
aveage_edge_per_nodes=sum(edge)/nodes

# histogram of the number of edges for each nodes
hist(edge, xlim = c(0,200), breaks=200, xlab="Number of Edges", ylab="Count", main="Fig. 1 Histogram of number of edges for each node")

# make a subset of data from original dataset
b=subset(a, a[,1]<=100&a[,2]<=100)
network=graph.data.frame(b, directed = FALSE)
# highlight the nodes with different color
V(network)$color="yellow"
V(network)[degree(network)>=5]$color="green"
V(network)[degree(network)>=10]$color="red"
plot(network, main= "Fig. 2 Visualization of the network (1-100)")
```