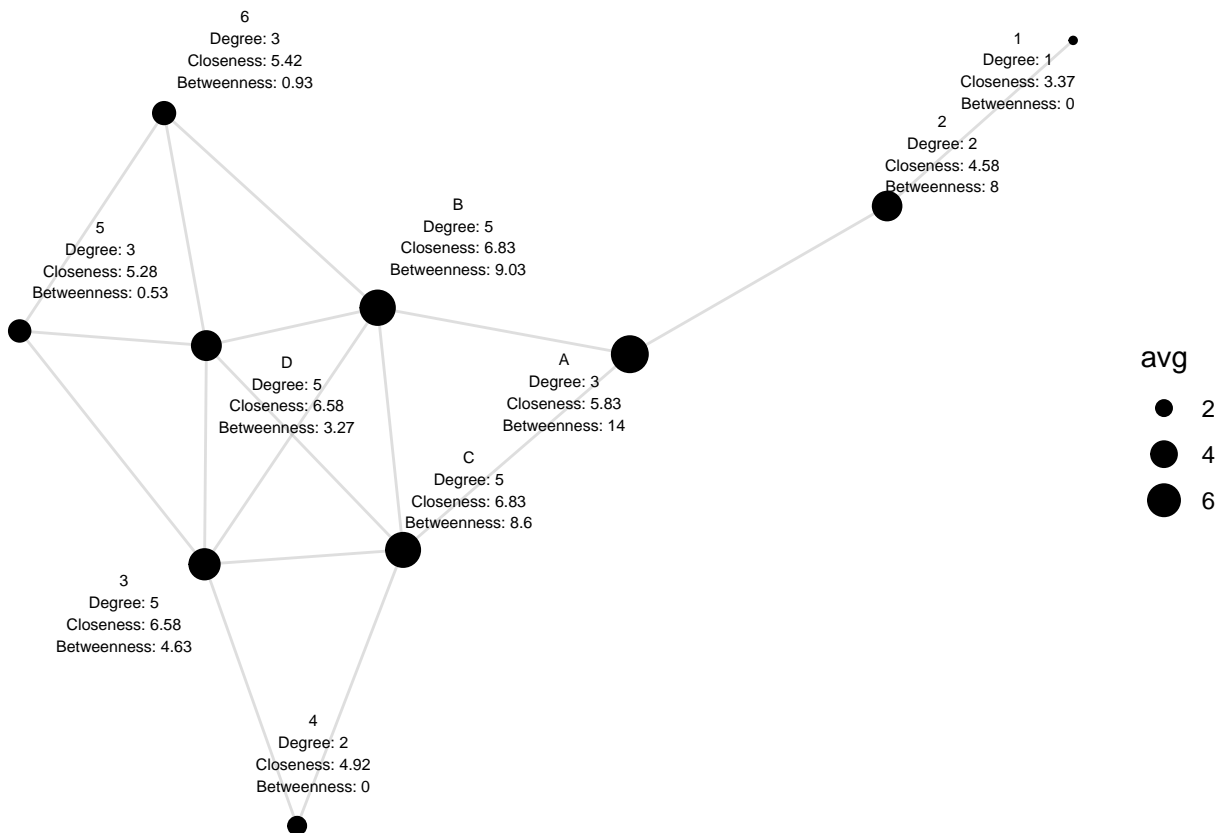


Exercise 2

Konstantin Volodin

2023-03-25

Network



Discussion

There appears to be 2 approaches to developing the most useful informal networks based on our discussion in class

1. Be at the center of a dense network
2. Be an intermediary between various networks

The first approach can be defined by the degree score and for the first approach B would likely be the best (as it has the highest other scores) The second approach can be defined by betweenness score and for this approach A would be best

It seems to me that the 1st approach would result in closer friendships, whereas 2nd approach would result in many acquaintances. Due to that I would go with 1st approach as making friends is more important for me than having many acquaintances who can help with career.

Code

```
### CREATE DATA
nodes <- tibble(name = c('1', '2', '3', '4', '5', '6', 'A', 'B', 'C', 'D'))
edges <- tibble(
  from = c('6', '6', '6', '5', '5', '4', '4', '3', '2', '2', 'D', 'D', 'B', 'B', 'C', '3', '3'),
  to   = c('5', 'D', 'B', 'D', '3', '3', 'C', 'D', '1', 'A', 'B', 'C', 'C', 'A', 'A', 'C', 'B')
)

### CREATE NETWORK
network <- tbl_graph(nodes = nodes, edges = edges, directed=FALSE)

### ESTIMATE METRICS
network <- network %>%
  mutate(degree = centrality_degree(),
         closeness = centrality_closeness_harmonic(),
         betweenness = centrality_betweenness()) %>%
  mutate(avg = (degree + closeness + betweenness)/3) %>%
  mutate(label = paste0(name, '\n',
                        'Degree: ', round(degree, 2), '\n',
                        'Closeness: ', round(closeness, 2), '\n',
                        'Betweenness: ', round(betweenness, 2), '\n'))
node_data <- network %>% data.frame() %>% tibble()

plot <- network %>%
  ggraph(layout="graphopt") +
  geom_edge_link(edge_colour = "grey", alpha=0.5) +
  geom_node_point(aes(size=avg)) +
  geom_node_text(aes(label = label), size=2, repel=TRUE) +
  theme_void()
```