Linkedin_Network

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Network Analysis on Linkedin

LinkedIn is a powerful tool for professional networking, allowing individuals to connect with others in their industry, showcase their skills and experience, and seek out new job opportunities.

In this analysis, we will be taking a closer look at my personal network on LinkedIn. By examining the connections I have made, we will gain insights into the companies I've made the most connections, and the potential opportunities that may be available in the future.

Top 15 Companies in a table

```r
# Import CSV
connections = read.csv("C:/Users/ximen/OneDrive/MMA/4/Organizational Network/Ex 1 Linkedin/Connections.csv")
attach(connections)



# Create a table with
connections$name =  paste(connections$First.Name, substr(connections$Last.Name, start = 1, stop = 1), sep = " ")

connections = connections[, c("name", "Company","Position", "Connected.On")]

# create a frequency table
freq_table = table(connections$Company)
freq_table = sort(freq_table, decreasing = TRUE)
top15= head(freq_table, n = 15)



# Display the list as a table
knitr::kable(top15, col.names = c("Company", "Connections"))
```

Company	Connections
Unilever	49
Livingston International	23
Evonik	12
McGill University - Desautels Faculty of Management	11
Amazon	9
Tecnológico de Monterrey	9

Company	Connections
	8
Electronic Arts (EA)	7
BDC	6
Canadian Tire Corporation	6
Citibanamex	6
KPI Digital Solutions	6
Pratt & Whitney Canada	6
Air Canada	5
L'Oréal	5

Top 15 Companies in a graph

```
# create a bar chart of the frequency table
barplot(top15, main = "Top 15 Connections on Linkedin",
        ylab = "Number of Connections",
        col = "steelblue", las = 2, cex.names = 0.8)
```

Top 15 Connections on Linkedin
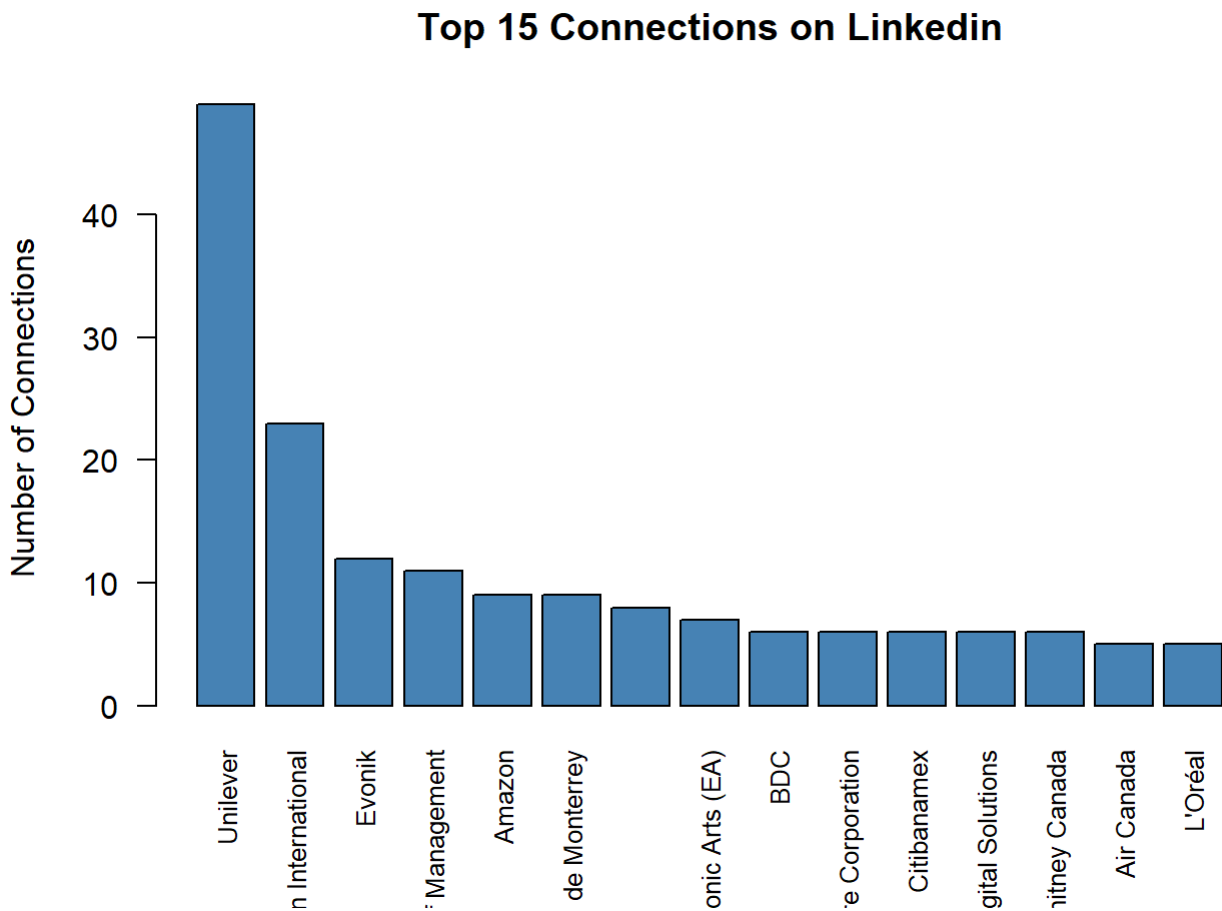
Creating nodes

The nodes are represented by my contacts, and I am also including the companies they worked for.

```
######### Creating nodes

library(tidyverse)
```

```
## ── Attaching core tidyverse packages ──────────────────── tidyverse 2.0.0 ──
## ✓ dplyr      1.1.0      ✓ readr      2.1.4
## ✓ forcats    1.0.0      ✓ stringr    1.5.0
## ✓ ggplot2    3.4.1      ✓ tibble     3.2.0
## ✓ lubridate 1.9.2       ✓ tidyr      1.3.0
## ✓ purrr      1.0.1
## ── Conflicts ──────────────────────────────── tidyverse_conflicts() ──
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag()    masks stats::lag()
## ℹ Use the  ]8;;http://conflicted.r-lib.org/ conflicted package ]8;;  to force all conflicts t
o become errors
```

```
people <- connections %>%
  distinct(name) %>%
  rename(label = name)

companies <- connections %>%
  distinct(Company) %>%
  rename(label = Company)

nodes <- full_join(people, companies, by = "label")
nodes <- rowid_to_column(nodes, "id")
head(nodes)
```

```
##   id     label
## 1  1  Thalia F
## 2  2  Sharon F
## 3  3  Martin V
## 4  4   Jamil K
## 5  5  Nikita M
## 6  6 Fartash H
```

Creating edges

The edges represent the relationship between the people and the companies.

```
#### Creating edges

edges <- connections[, c("name", "Company")]

edges <- edges %>%
  left_join(nodes, by = c("name" = "label")) %>%
  rename(from = id)

edges <- edges %>%
  left_join(nodes, by = c("Company" = "label")) %>%
  rename(to = id)

edges <- unique(select(edges, from, to))
head(edges)
```

```
##   from  to
## 1    1 714
## 2    2 715
## 3    3 716
## 4    4 717
## 5    5 718
## 6    6 717
```

Graph with network library

One can see that there are around 4 companies with the most connections. However one cannot really see the details of each.

```
## Building network
library(network)
```

```
##
## 'network' 1.18.1 (2023-01-24), part of the Statnet Project
## * 'news(package="network")' for changes since last version
## * 'citation("network")' for citation information
## * 'https://statnet.org' for help, support, and other information
```

```
routes_network <- network(edges,
                          vertex.attr = nodes,
                          matrix.type = "edgelist",
                          ignore.eval = FALSE)
plot(routes_network, vertex.cex = 1)
```
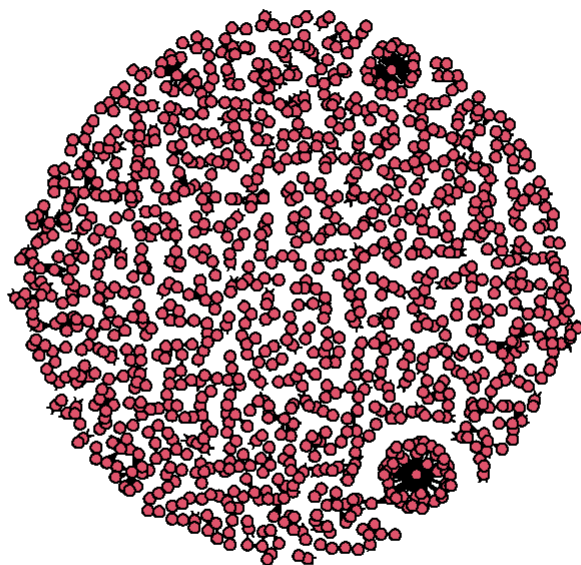
Graph with igraph

Using igraph I added a way to see the names of companies and names, however, it is still difficult to see it due to the high number of connections.

```
## igraph

library(igraph)
```

```
##
## Attaching package: 'igraph'
```

```
## The following objects are masked from 'package:network':
##
##     %c%, %s%, add.edges, add.vertices, delete.edges, delete.vertices,
##     get.edge.attribute, get.edges, get.vertex.attribute, is.bipartite,
##     is.directed, list.edge.attributes, list.vertex.attributes,
##     set.edge.attribute, set.vertex.attribute
```

```
## The following objects are masked from 'package:lubridate':
##
##     %--%, union
```

```
## The following objects are masked from 'package:dplyr':
##
##      as_data_frame, groups, union
```

```
## The following objects are masked from 'package:purrr':
##
##      compose, simplify
```

```
## The following object is masked from 'package:tidyr':
##
##      crossing
```

```
## The following object is masked from 'package:tibble':
##
##      as_data_frame
```

```
## The following objects are masked from 'package:stats':
##
##      decompose, spectrum
```

```
## The following object is masked from 'package:base':
##
##      union
```

```
routes_igraph <- graph_from_data_frame(d = edges,
                                       vertices = nodes,
                                       directed = TRUE)

plot(routes_igraph,
     vertex.size = 3,
     vertex.label.cex = 0.2,
     edge.arrow.size = 0.01)
```
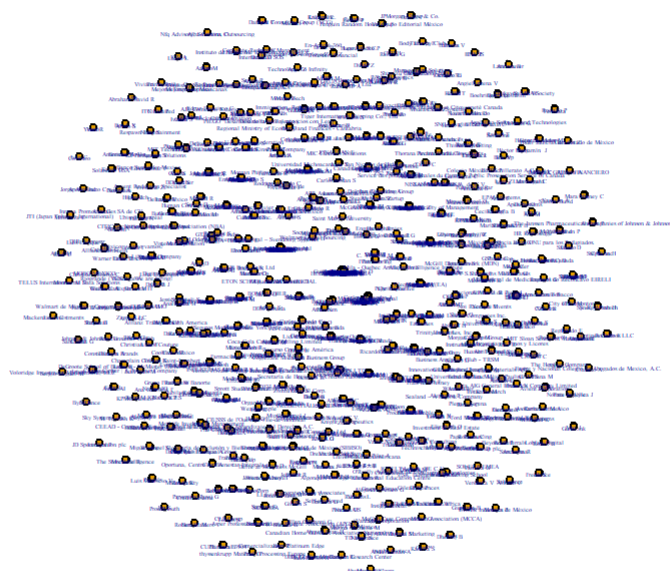
Graph with visnetwork library

Using the visnetwork library it is easier to explore the connections and see the names of the companies with the most connections.

```
## visNetwork


library(visNetwork)
library(networkD3)
visNetwork(nodes, edges)
```