

## INTRODUCTION

This report visualises and explains the relationships among members of a research group using a **directed graph (DiGraph)**. The graph shows the direction of interactions between members and was created in Python using the **NetworkX** library.

The network was displayed using **Matplotlib**, where each member appears as a yellow-labeled node, and arrows show the direction of communication. The title of the network is “*Members of a Research Group.*”

## WHY DO USE A DIRECTED GRAPH

- It shows the direction of relationship
- It captures real life interactions
- It helps show how information and influence flow in a group
- It helps in analysis of in- degree or Out -degree)
- It helps us identify leaders ,isolated individuals, key influencers within a group

The graph is made up of a set of 14 directed relationships among members : Frederick , Lydia , Abdul, Isaac , Pearl , Andrews and Emmanuel .

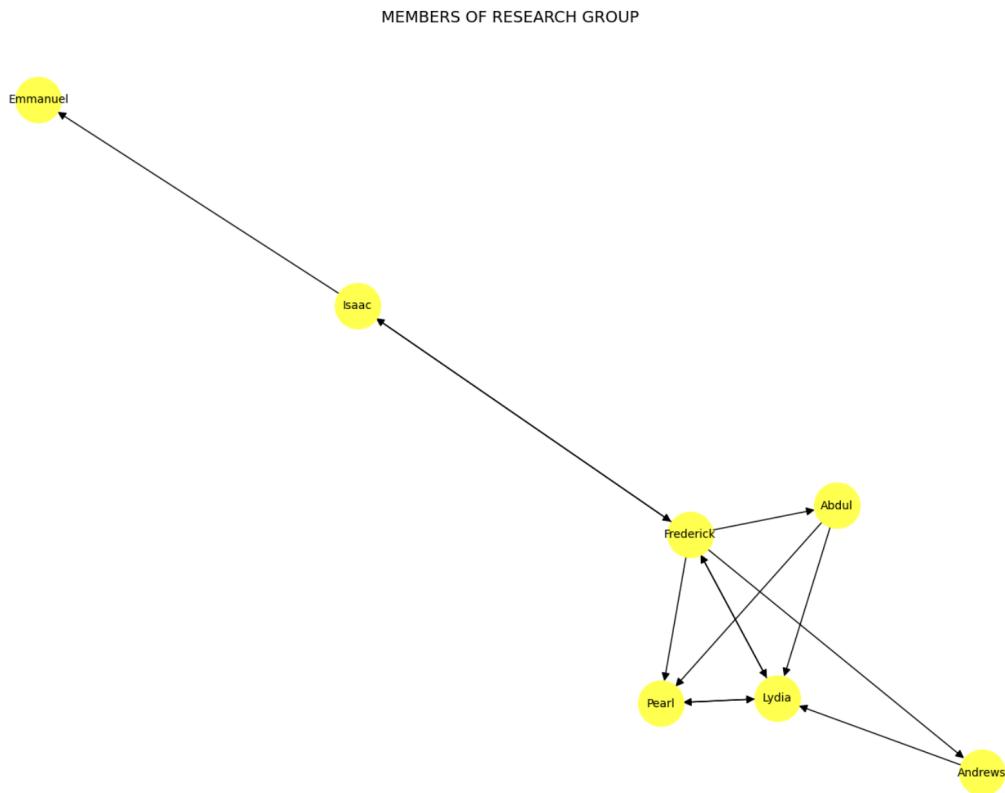
## Network Size

Number of nodes	7
Number of edges	1
Isolated nodes	0

## Network/ Degree distribution

Node	In-Degree	Out- Degree	Total Degree
Frederick	2	5	7
Abdul	1	3	3
Lydia	4	2	6
Isaac	1	2	3
Pearl	3	1	4
Andrews	1	1	2
Emmanuel	1	0	1

*The figure below shows the network diagram*



## INTERPRETATION

- **Frederick and Lydia are the main influencers** in the group because they have the most connections.
- **Frederick** appears is the leader since he starts most interactions and has most connections .
- **Lydia** receives many connections and acts as a **coordinator or intermediary**.
- They communicate both ways, showing strong collaboration and shared decision-making.
- **Abdul and Isaac** serve as supporting members who help connect others.
- **Emmanuel and Andrews** have limited interactions and appear less involved
- There are no isolated no

## RECOMMENDATION

**Emmanuel and Andrews** should participate more in group communication

## CONCLUSION

Frederick is the leader while Lydia coordinates the research group, with Abdul and Isaac helps to maintain communication flow. Emmanuel and Andrews participate less. The directed graph provides a clear picture of how the group communicates and can be used to improve collaboration in the future.