FINAL ASSIGNMENT

GROUP PROJECT USING NLP AND NETWORK ANALYSIS

TEAM MEMBERS:

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Introduction

Problem Statement:

By understanding how KOLs and brands are connected, companies can identify key influencers, popular brands, and the types of relationships for deeper insights into the influencer market.

Approach:

Using news articles as data sources, extract relationships between KOLs and brands, followed by network analysis to reveal patterns and structures in influencer-brand interactions
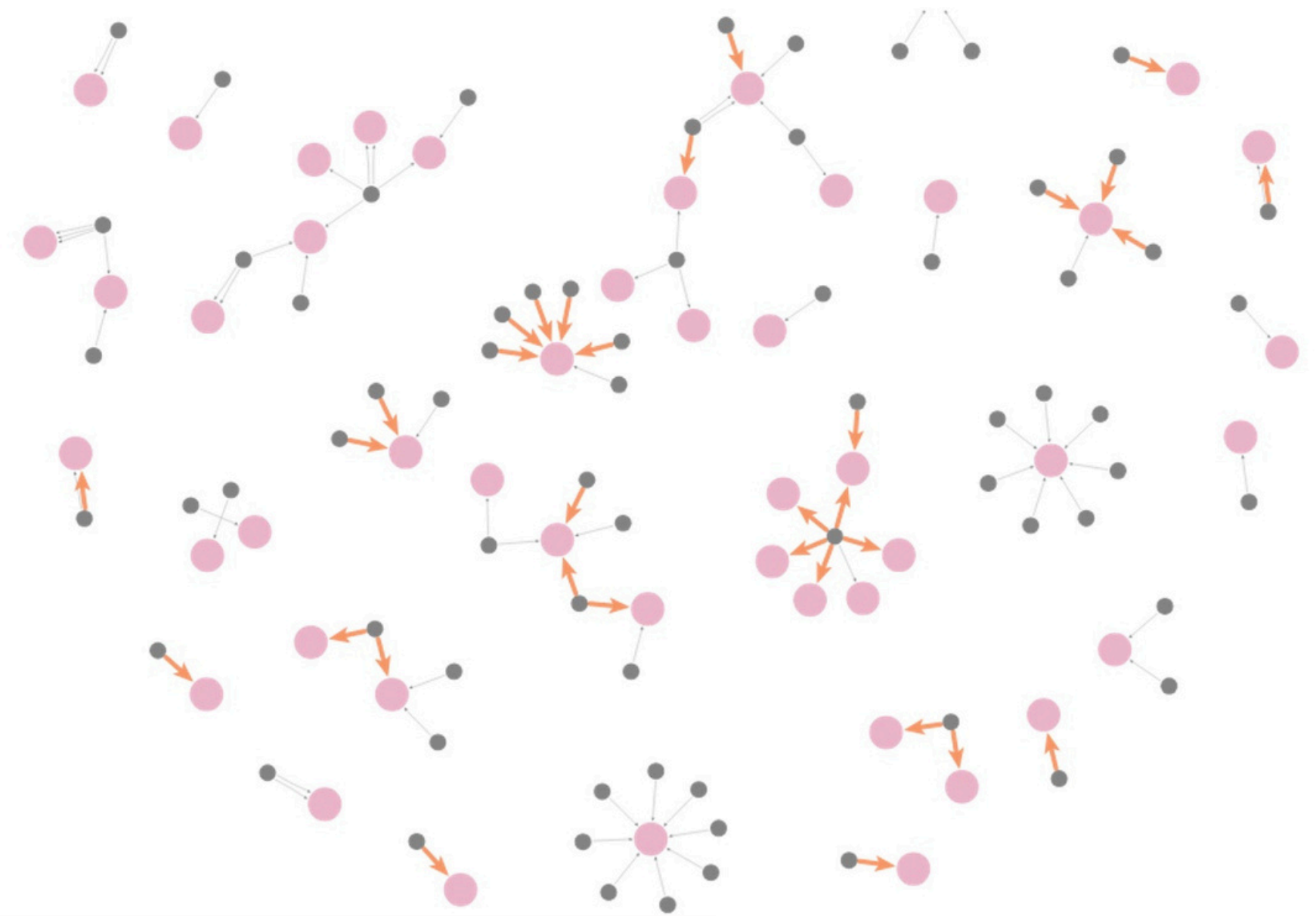
Submission structure:

- Phase_1.ipynb: brand category classification, relationship extraction, knowledge graph using Neo4J
- Phase_2.ipynb: network analysis

KOL-Brand Graph

Results overview

Nodes (148)

* (148)　Beauty_Cosmetics (60)　Influencer (88)

Relationships (116)

* (116)　ambassador (13)　collaborator (13)
endorser (28)　partner (27)　reviewer (35)

Brands in different category are connected through the same influencers they are engaged with.

If we look at specific category, for example *Beauty and Cosmetics*, most of the relationships are reviewers. This indicates that consumers rely heavily on reviews from trusted figures, making these reviewers key players in purchase decisions.

Brand to Brand Relationship

This graph shows brand relationships based on shared influencers, where each node represents a brand, and the connections indicate shared influencers between them.

The structure shows a distinct, dense central cluster where brands are highly connected. This core suggests that these brands share several influencers, possibly targeting similar audiences or using similar marketing strategies. The brands in this core play a central role in the network, as they connect various parts of the network through shared influencer relationships.

In contrast, brands positioned around the outer edges of the graph have fewer connections, indicating a more selective approach to influencer partnerships. These brands may either rely on unique influencers or have fewer overlaps with others, suggesting they focus on a more specific audience group.

The most central parts of brand graph
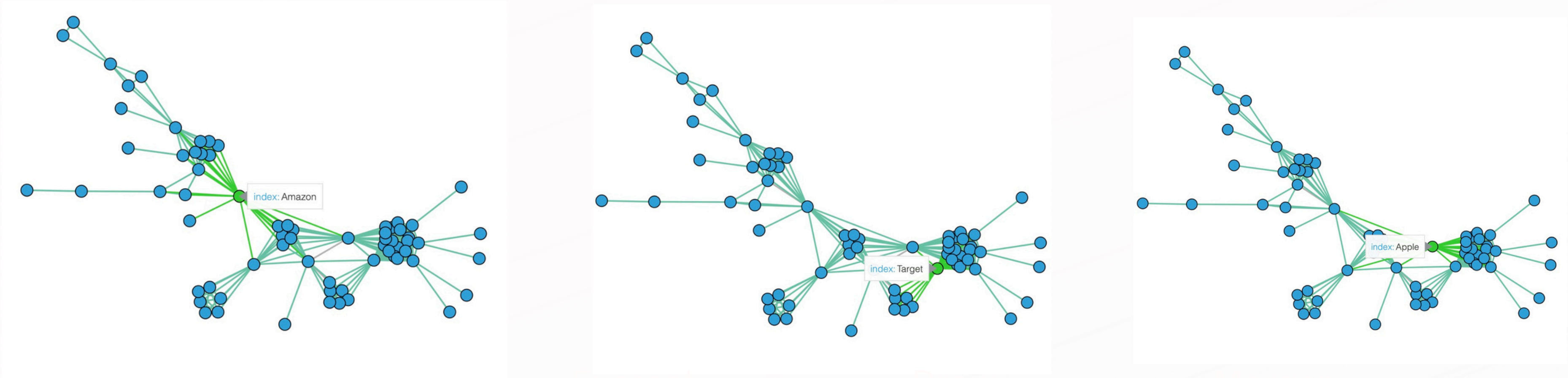
We can see that brands like **Apple**, **Target**, and **Amazon** act as key connectors (bridges), helping separate groups become part of a larger network. These brands enable information and influence to flow smoothly between different brand communities, making the network more connected.

KOL to KOL Relationships

After trimming by centrality, the network becomes more sparse.

Central nodes in the network are "Hannah Murphy", "Marques Brownee", "Geoffrey Hinton" and "Laura Mae Martin", KOLs tend to have more stable collaborations with technology brands.

When the low-centrality bridge nodes are removed, remaining KOLs are mainly in Fashion and Apparel brands.

Central node

Isolated cluster