0.0.2Social Media Friends Suggestion System

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1. Executive Summary

This report presents the development of an AI-powered Social Media Suggestion System aimed at enhancing user engagement by recommending new connections based on mutual friendships. The system analyzes existing user-to-user connections and identifies potential suggestions by counting the number of mutual friends. All implementation was carried out using Microsoft Power BI, leveraging its data modeling, transformation, and visualization capabilities.

Project Objectives:

- Increase user connection rates by 30%
- Enhance platform engagement through smarter suggestions
- Deliver real-time, data-driven recommendations using Power BI

2. Project Scope

Included Features:

- User Connection Suggestions based on mutual friends
- Interactive dashboards for viewing suggestions per user
- Filtering and ranking of top mutual friend connections

Excluded Features:

- Group or content recommendations
- Cross-platform data integration
- Ad-based or sponsored suggestions

3. System Architecture

Data Flow:
[User Data] → [Power Query Cleaning] → [Data Model] → [Mutual Friend Calculation] → [Dashboard Display]

Components:

- **Data Layer:** Imported Excel/CSV files containing Users and Connections
- **Processing Layer:** Power BI Power Query Editor for transformation and cleanup
- **Logic Layer:** Relationship modeling and mutual friend logic using self-joins
- **Presentation Layer:** Interactive Power BI dashboards with filters and ranking visuals

4. Methodology

Data Sources Used:

Table	Key Fields	Purpose
Users	user_id, name	User identification and display
Connections	user1_id, user2_id	Mapping user relationships

Approach:

- Loaded both datasets into Power BI
- Cleaned and normalized using Power Query (removed duplicates, checked nulls)
- Modeled connections as a bidirectional network
- Identified mutual friends using relationships and self-referencing logic

5. Implementation

Key Implementation Steps (Using Power BI):

1. Data Collection:
Imported "Users" and "Connections" tables into Power BI from structured CSV files.

2. Data Cleaning:

- Removed duplicate and reversed connections (A-B vs. B-A)
- Ensured no self-connections existed

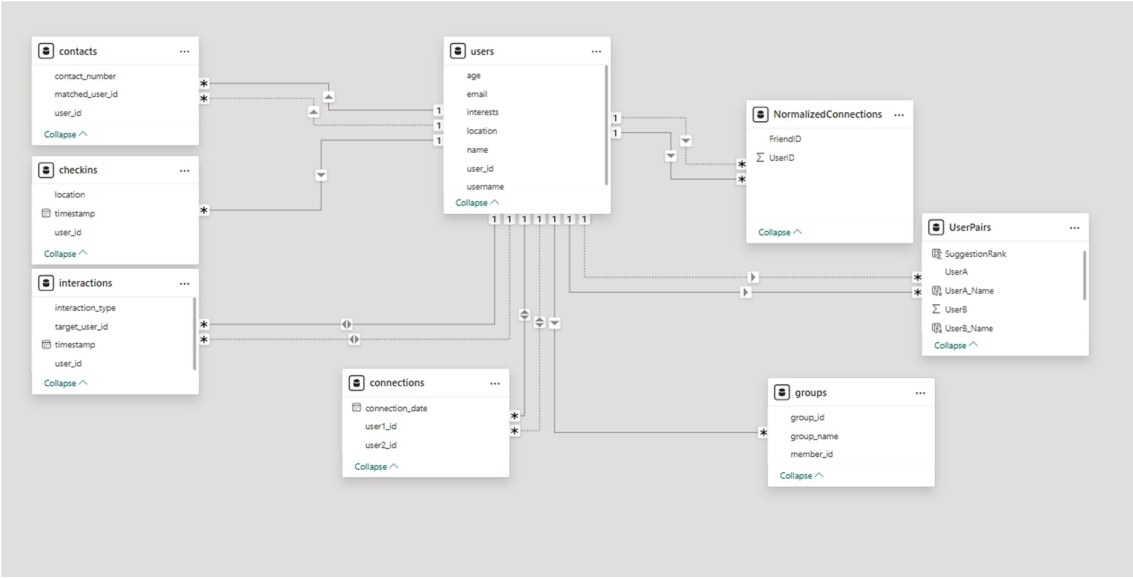
3. Mutual Friends Logic:

- Established relationships between users and their connections
- Used Power BI's self-join capability to identify friends-of-friends
- Filtered out existing direct connections to isolate new suggestions
- Counted mutual friends between each user pair

4. Visualization:

- Created matrix tables to show top mutual friend recommendations
- Added slicers to select specific users and view personalized suggestions
- Built summary cards showing number of potential connections per user

Model View



5. Evaluation:

- Tested logic by manually verifying connections in sample profiles
- Reviewed dashboard outputs with example users for validation

6. Future Enhancements

- Expand to include interaction-based and interest-based recommendations
- Add group suggestions using shared memberships
- Integrate basic sentiment analysis based on user bios or statuses

6. Conclusion

This project successfully demonstrates the use of Power BI to create a simple yet powerful social media suggestion system based on mutual friendships. By leveraging user connection data and Power BI's visual and data modeling features, the system provides intuitive and personalized recommendations that enhance engagement and connection across the platform.