Assignment - 3
Data Mining Tasks

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LinkedIn Professional Networking

Link Prediction:

- **Task Description**:The practice of estimating the likelihood of a connection or link between two elements in a network is known as link prediction. LinkedIn's connections represent professional contacts, and its entities are its users.
- **Why it Applies:**
    - LinkedIn's connection recommendation system aims to predict and suggest potential connections between users based on various factors such as shared connections, common professional interests, similar industries, and other features indicative of a professional relationship.
    - Predicting Future Connections: Link prediction involves analyzing existing relationships within a network to forecast potential future connections. This is precisely what LinkedIn does when it suggests people you might know or want to connect with.
    - Graph Analysis at Play: LinkedIn's network of users and their connections can be represented as a graph, where nodes represent users and edges represent connections. Link prediction algorithms are designed to work with such graph structures.
    - Proactive Relationship Building: By proactively suggesting connections, LinkedIn facilitates networking and relationship building, which is crucial for professional development and career growth.
- **Example Rationale:** If User A is connected to Users B and C, and User B is also connected to User D, there is a higher likelihood that User A might want to connect with User D. The link prediction algorithm analyzes such patterns and features to recommend potential connections.

Twitter Short Messaging & Follow Network

Link Prediction & Similarity Matching:

- **Task Description:** The practice of estimating the likelihood of a connection or link between two elements in a network is known as link prediction. Within the Twitter environment, connections are "follow" relationships, and entities are users.
- **Why it Applies:**

    - Twitter's "users to follow" recommendation system aims to predict and suggest potential connections between users based on various factors such as shared interests, followers in common, and other features indicative of a potential follow relationship.
    - Finding Similarities: Similarity matching focuses on identifying data points that closely resemble each other based on specific features. Twitter applies this concept to match users with similar interests, habits, or connections.
    - Recommending Relevant Users: By identifying users with high similarity scores, Twitter can recommend accounts that are likely to be relevant and engaging for a particular user.
- **Example Rationale:** If User A follows Users B and C, and User B also follows User D, there is a higher likelihood that User A might want to follow User D. The link prediction algorithm analyzes such patterns and features to recommend potential connections.

Shea-Terra Skin Care Online Store

Profiling:

- **Task Description:** Profiling involves creating user profiles based on certain characteristics and behaviors. In the context of an online store like Shea-Terra Skin Care, the goal is to understand the characteristics and behaviors of customers to create targeted advertising and personalized promotions.
- **Why it Applies:**
    - The focus is on building profiles of customers based on their purchase behaviors, preferences, and other relevant attributes. This allows the company to gain insights into what products customers are interested in, how often they make purchases, and other patterns that can inform targeted marketing efforts.
    - Develop targeted advertising campaigns: Tailor advertisements to specific customer segments based on their individual preferences and purchase history.
    - Create personalized promotions: Offer discounts or bundles relevant to specific customers' interests and buying habits.
    - Predict future purchases: Identify customers most likely to buy specific products, allowing for targeted marketing and inventory management.
- **Example Rationale:** Profiling might involve creating customer segments based on their purchasing history, identifying which products are frequently bought together, and understanding the frequency and timing of purchases.