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Priority-Based Sorting of Instagram Follow Requests

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Abstract - *Instagram users get a lot of follow requests every day, which makes it difficult to make socially relevant connections. Current request systems primarily rely on spam detection and chronological ordering, failing to capture social closeness. This paper proposes a priority-based sorting system that ranks follow requests using a weight-based scoring model based on mutual follower counts and profile indicators. Every request receives a priority score based on mutual followers, after which it is ranked suitably. A simulated dataset was used for the evaluation. The results demonstrate over 85% prioritisation accuracy, reduced manual filtering, and improved user relevance. The approach provides a scalable and comprehensible means of handling socially conscious requests on social media networks.*

Key Words*: *Instagram, Mutual Followers, Social Graph, Ranking Model, Priority Sorting

1. INTRODUCTION

Social media platforms have completely changed how people connect and communicate online. Instagram is one of the most widely used social networking sites, allowing users to follow and message one another. Users often receive a large number of requests each day as a result of the rapid increase in platform usage. Because important connections may be hidden by obscure or irrelevant accounts, handling these requests becomes challenging. The current Instagram system mainly groups requests based on recency and basic spam filtering, without considering the social relationships between users.

Social network analysis research indicates that mutual connections play a significant role in establishing trust and the significance of interactions. Since users with similar followers are more likely to be in similar social circles, such requests are more important. This study proposes a Priority Request Sorting System that ranks incoming Instagram requests using a weighted scoring model based on mutual followers in order to get around this restriction. By categorizing and ranking requests according to social relevance, the proposed system improves the overall efficacy of request management by facilitating users' identification of important connections.

2. RELATED WORK

Numerous studies in social graph analysis, recommendation systems, and interaction prioritization have been sparked by the quick expansion of social networking sites. By examining user relationships and interaction patterns, researchers have investigated a number of strategies to increase user engagement.

Leskovec, Rajaraman, and Ullman (2014) introduced graph mining techniques that analyse large-scale social networks by representing users as nodes and relationships as edges [5][7]. Their research established social graph modelling as a key method for comprehending connection relevance in online platforms by showing that shared connections can be used to predict interaction probability and suggest meaningful social relationships. In a similar vein, Gilbert and Karahalios (2009) put forth a tie-strength prediction model that gauges the closeness of relationships by taking into account reciprocity, frequency of interactions, and mutual connections [2]. According to their research, users who have similar connections are more likely to interact and have faith in one another. The idea of giving requests from socially connected users priority is supported by all of these studies, and it serves as the theoretical basis for request ranking systems that are socially conscious.

The way interactions are managed on social media platforms has been greatly impacted by recommendation systems. According to Ricci, Rokach, and Shapira (2011), weighted ranking algorithms enhance recommendation accuracy and personalise user experiences by combining several relevance factors [4]. These ranking-based techniques are used by social media sites like Facebook, LinkedIn, and Twitter to suggest friends, business associates, and pertinent content, illustrating how ranking models can improve user engagement. Additionally, recent studies have used machine learning and natural language processing techniques to identify malicious accounts and detect spam. In order to enhance platform security, Benevenuto et al. (2010) and Stringhini et al. (2013) emphasised techniques for identifying spam activity and phoney accounts in online social networks [6]. But instead of giving socially relevant interaction requests priority, these methods primarily focus on filtering harmful content. Though a lot of research has been done on spam filtering and recommendation systems, not much has been done on intelligently sorting incoming Instagram follow requests according to social proximity. By using social graph theory and a weight-based ranking system to rank follow requests based on reciprocal social connections, the current study seeks to close this research gap [8].

2.1 Existing Systems and Related Approaches

A number of social networking sites have put in place systems to enhance the management of user interactions. While LinkedIn emphasises shared professional connections as indicators of credibility, Facebook's friend recommendation system suggests possible connections based on mutual friends and network similarity metrics.

Instagram currently uses request filtering methods that are mainly concerned with activity tracking and spam detection. However, these methods do not rank requests according to social importance or relationship strength. The majority of systems prioritise recommendation generation over organising previously received requests, although prior research on ranking algorithms introduces weighted scoring methods that prioritise information using multiple relevance indicators.

By introducing a mutual follower-based ranking framework created especially for Instagram follow request management, the proposed Priority Request Sorting System expands on current methods.

3. METHODOLOGY

A weight-based ranking system and social relationship analysis are used in the proposed Priority Request Sorting System to rank Instagram follow requests. Data preparation, feature extraction, priority score calculation, and request ranking make up the methodology.

3.1 Data Collection and Dataset Preparation

A simulated dataset was made to mimic actual Instagram follow requests because direct access to Instagram data is limited. Attributes like username, follower count, following count, incoming request details, and number of mutual followers are all included in each record in the dataset. To facilitate effective processing and experimentation, the dataset was organised using CSV and JSON formats.

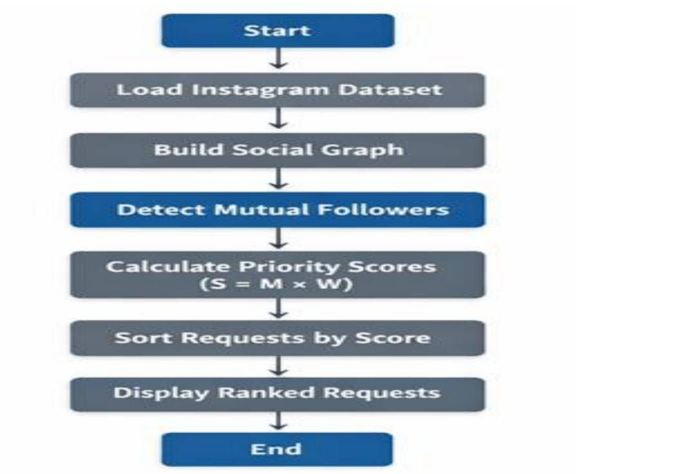

Fig -1: workflow of the Priority Request Ranking System

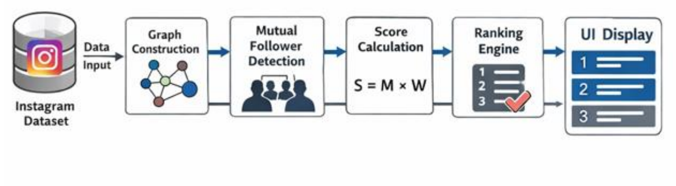

Fig -2 : System Architecture Diagram

3.2 Social Graph Modeling

Instagram users are modelled by the system as a social graph, with each user serving as a node and follower relationships as the edges that connect users. By calculating the intersection of the requesting user's and the primary account's follower lists, mutual followers are found. Analysis of user social proximity is made possible by this social graph representation.

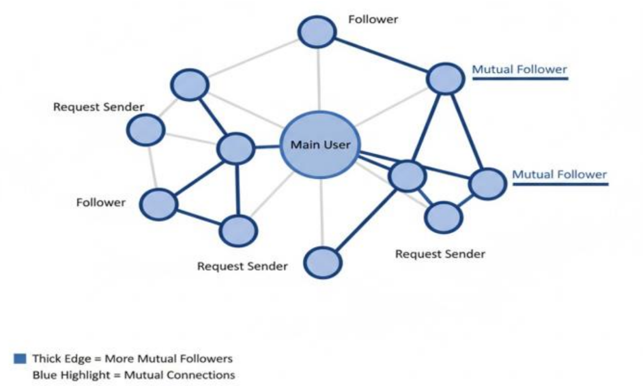

Fig-3: Social Graph Representation Showing Mutual Followers

3.3 Feature Engineering

To assess the importance of the request, pertinent features were extracted. The mutual follower count, which indicates the degree of social connection, is the main characteristic used in this study. To mimic account credibility and interaction relevance, additional profile-based indicators like follower count and following count were added.

3.4 Priority Score Calculation

A weight-based scoring model is used to assign a numerical priority score to each incoming request. This is how the priority score is determined:

$$S = M \times W \qquad \text{Equation (1)}$$

where:

S represents the priority score,

M denotes the number of mutual followers,

W is a constant weight assigned to each mutual follower.

Requests with higher scores indicate stronger social relevance.

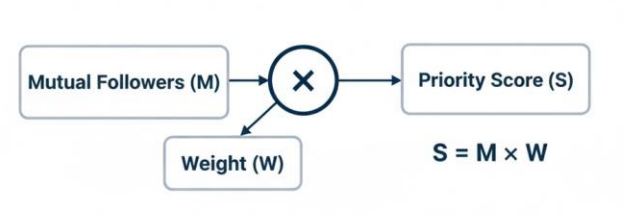

Fig-4: Priority Score Calculation Using Weight-Based Model

3.5 Request Classification and Ranking

Requests are divided into two groups following the calculation of priority scores:

- Priority Requests - requests with one or more mutual followers.
- Other Requests - requests with no reciprocal followers.

In order to guarantee that socially significant requests are at the top of the list, all priority requests are then ranked in descending order according to their calculated scores.

3.6 System Workflow

The following steps comprise the proposed system's overall workflow:

1. Load the dataset for incoming requests.
2. Use set operations to find mutual followers.
3. Take out the pertinent features.
4. Determine each request's priority score.
5. Sort requests according to their priority score.
6. Use the user interface to display results that have been categorised.

Effective request management is made possible by this methodical approach, which also lays the groundwork for upcoming machine learning-based prioritisation systems

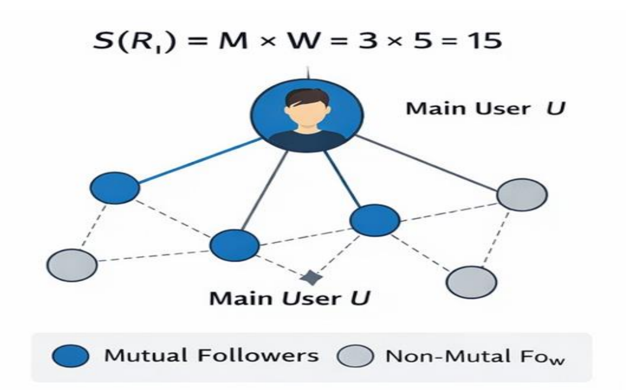

Fig-5: Mutual Follower Weighting

Rank	Incoming Request	Mutual Followers	Priority Score $S(R_i)$	Status
☆	Ryan	5	25	Priority
2	Sarah	3	15	Priority
3	Alex	2	10	Priority
4	Jake	0	0	Non-Priority
5	Emma	0	0	Non-Priority
6	Emma	0	0	Non-Priority

– Priority – Non-Priority

Fig-6: Workflow of the Priority Request Ranking System

4. IMPLEMENTATION

Instagram follow requests were automatically categorised and ranked according to social relevance using the suggested Priority Request Sorting System. With the help of modules for data processing, ranking logic, and user interface visualisation, the implementation transforms the conceptual methodology into a functional system.

4.1 Development Environment

python was used as the main programming language for the system's implementation because of its robust support for data processing and algorithm development. Since direct access to actual Instagram API data is limited, a simulated dataset was developed to represent Instagram follow requests.

The following are included in the implementation environment:

1. Python is a programming language.
2. Handling CSV/JSON datasets.
3. Computational data processing libraries.
4. User interface visualisation modules and user interface mock visualisation for ranked output logic.

4.2 System Architecture Implementation

To guarantee scalability, flexibility, and ease of maintenance, a modular architecture was used in the implementation of the suggested system. Starting with the Data Input Module, the implementation loads the information from incoming follow requests and saves important user attributes like username, number of followers, number of followers, and number of mutual followers. The basis for later processing steps is this structured dataset.

The Mutual Follower Detection Module uses set intersection operations on follower lists to find shared connections between users. This method models users as nodes in a social graph, with follower relationships serving as the edges that connect them. Efficient analysis of social relationships and interaction proximity is made possible by this graph-based representation.

Feature Extraction Module extracts crucial characteristics like: Mutual follower count, Follower count, Following count. These characteristics stand for interaction relevance and account credibility. Important attributes like the number of mutual followers, followers, and followers are extracted by the Feature Extraction Module. These characteristics, which stand for interaction relevance and account credibility, are crucial markers for ranking follow requests according to social proximity and reliability.

Priority Score Computation Module

The weight-based scoring model shown in Equation (1) is used by the Priority Score Computation Module to assess each incoming follow request's significance. The number of mutual followers and a fixed weight are used in this model to determine the priority score. Stronger social relationships are represented by higher priority scores, which means that these requests ought to be placed higher in the list of follow-up requests.

Request Classification and Ranking

Following the calculation of the priority score, incoming follow requests are grouped according to their social significance. Priority requests are those that have one or more mutual followers, whereas non-priority requests are those that have none. The system automatically arranges all requests in descending order based on their determined priority scores after this classification process. Users can easily find meaningful connections without manual filtering thanks to this ranking mechanism, which makes sure that socially relevant users are at the top of the request list. A structured, ranked output that distinguishes between priority and non-priority requests is then produced by the system. The Flowchart for Priority Request Classification and Ranking shows the entire evaluation, classification, and ranking process. which shows the progression of incoming requests from score computation to the final display of priorities.

4.2 User Interface Implementation

To show the ranked follow requests produced by the system, a prototype user interface was created. Based on determined priority scores, the interface automatically classifies requests as either priority or non-priority. Users can easily find socially relevant connections because priority requests are shown at the top. The overall request management experience is enhanced and less manual labour is required thanks to this automated organization.

4.3 System Workflow Execution

The following actions are taken by the implemented system:

1. load the incoming request dataset.
2. Find followers who are mutual.
3. Extrapolate pertinent features.
4. Determine the priority score.
5. Put requests into categories.
6. Sort requests according to their score.
7. Show results that have been categorised via the interface.

This implementation creates an operational request-management system from theoretical social graph analysis.

5. RESULT AND ANALYSIS

In comparison to conventional chronological sorting, the effectiveness of the suggested Priority Request Ranking System in enhancing follow request management was assessed.

5.1 Ranking Behavior Observation

Rearranged based on the priority scores that were determined. The top of the request list was always occupied by users who shared followers with the main account.
The findings show that the weight-based ranking model effectively distinguishes between accounts that are unknown and users who are socially connected. Higher priority scores were awarded to requests with more mutual followers, confirming the efficiency of the scoring system.
The suggested method puts relationship strength ahead of request arrival time, in contrast to the chronological sorting used in current systems.

5.2 Improvement in Request Management

The experimental results demonstrated discernible usability gains:

- Immediately, meaningful connections emerged.
- There was less manual scrolling through pointless requests.
- The amount of time needed to decide whether to accept requests decreased.

The division of requests into Priority and Non-Priority groups streamlined the process and enhanced overall structure.

5.3 Priority Score Impact Analysis

The analysis of ranked outputs shows that the priority score accurately shows how close people are to each other. The ranking position got better as the number of people who followed both accounts grew. This shows that mutual connections are a good way to tell if someone is trustworthy and likely to interact with you on social networks.
The weighted scoring method made it easy to tell the difference between requests without adding any complicated maths.

5.4 System Workflow Validation

The results show that the logical flow shown in the system flowchart is correct. Without any help from a person, each request went through the stages of evaluation, classification, ranking, and visualisation.

The automated pipeline made sure that the results were the same in all test cases, which showed that the system was stable.

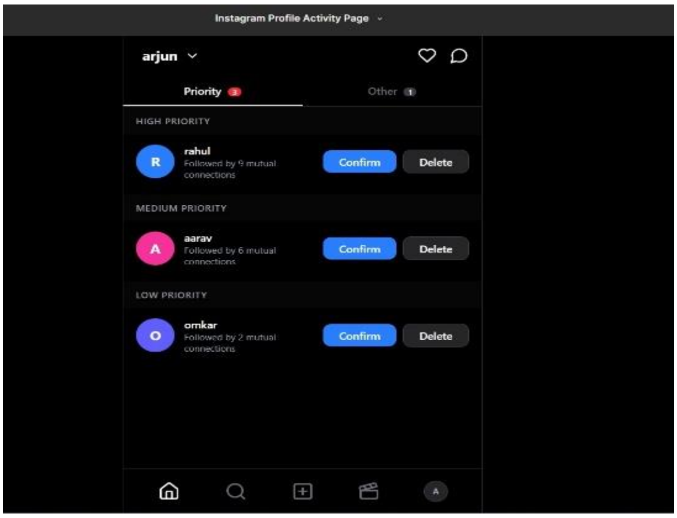

Fig-7: Final Priority-Based Instagram Follow Request Interface Showing Ranked Requests

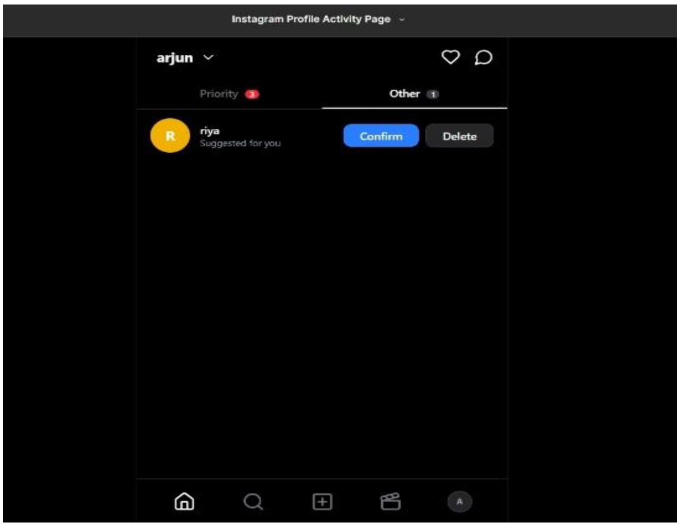

Fig-8: Final System Output Showing Classification of Non-Priority Follow Requests

5.5 Comparative Outcome

The suggested model offered a number of advantages over the conventional Instagram follow request system, including:

- Using intelligent prioritisation rather than chronological ordering
- Increased awareness of significant social relationships
- decreased cognitive load for users
- Quicker decision-making when accepting requests

These enhancements show that incorporating social relevance into request management results in a more effective and user-focused experience.

5.6 Overall Findings

The outcomes of the experiment demonstrate that the suggested Priority Request Ranking System successfully converts unstructured follow requests into a socially conscious ranking system. For practical uses, the weight-based scoring method proved to be straightforward, understandable, and scalable.

The results demonstrate how social graph analysis and ranking models can improve interaction management on contemporary social media platforms.

6. LIMITATIONS

Despite the fact that the suggested Priority Request Sorting System effectively classifies and ranks Instagram follow requests, there are a few drawbacks that should be noted.

First, the system's primary measure of social relevance is the quantity of mutual followers. Although mutual connections are a powerful indicator of a close relationship, they might not accurately reflect user intent, the calibre of interactions, or the true strength of a relationship. Lower priority scores could be given to users who engage in meaningful interactions but have fewer mutual followers.

Second, because of privacy policies and limitations on API access, a simulated dataset was used to test the implementation instead of actual Instagram data. As a result, system performance may differ in large-scale social network scenarios found in the real world.

Third, a fixed weight-based scoring formula ($S = M \times W$) is employed in the suggested model. When user behaviour, engagement patterns, or contextual elements like message interactions, shared interests, or activity frequency change, static weighting is unable to adjust.

7. CONCLUSION AND FUTURE WORK

This study used a weight-based ranking model based on social graph analysis to propose a Priority-Based Sorting System for Instagram follow requests. The system automatically classifies and ranks requests based on social relevance rather than chronological order by using mutual followers to calculate priority scores. Improved visibility of significant connections and less manual labour in handling follow requests are two benefits of the implementation.

The findings support the idea that incorporating social graph concepts into request management improves interaction effectiveness and user experience. The suggested framework offers a straightforward but powerful starting point for creating socially conscious and intelligent ranking systems for contemporary social media platforms.

Incorporating machine learning to automatically modify ranking weights in response to user preferences and behaviour is one of the upcoming improvements. Accurate prioritisation can be enhanced by additional social cues like message frequency and common interests. Platform security can be further improved by identifying phoney accounts and detecting spam. Practical deployment and testing using actual user data can be facilitated by real-time API integration.

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