PREDICTIVE MODELING OF TRUST RELATIONSHIPS IN ALIBABA'S E-COMMERCE ENVIRONMENT

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ABSTRACT

In order to help Alibaba's e-commerce company, this study presents how to infer trust relationships from billion-scale networked data. We formalize trust into various types and present a graphical model, namely eTrust, to combine type-based dyadic and triadic correlations in order to effectively use the network correlations between labeled and unlabeled links to forecast trust relationships. Additionally, we introduce a quick learning technique to manage networks on a billion-scale. We systematically assess the suggested approaches on four distinct dataset genres—Alibaba, views, Ciao, and Advogato—that have labeled trust relationships. The outcomes of the experiments indicate that the suggested techniques outperform a number of comparative methods by a significant margin (+1.7–32.3% by accuracy; $p << 0.01$, t-test). Most notably, in comparison to classic graph learning algorithms, our method delivers 2,000→speedup to infer trust connections when handling actual large networked data with over 1,200,000,000 edges (Ali-large). Finally, we have improved the gross merchandise volume (GMV) by 2.75% by applying the inferred trust connections to the Taobao platform, which is owned by Alibaba.

Key words: Map Reduce, Prediction, Visualization, Big Data, and E-commerce

1 INTRODUCTION

Any successful business transaction is built on trust. Building trust is especially important in the world of e-commerce, where consumers and sellers frequently conduct business anonymously. Leading e-commerce behemoth Alibaba has adopted cutting-edge techniques to forecast the trust ties between customers on its site in recognition of this difficulty. This study examines how Alibaba accomplishes this by utilizing big data and machine learning. We present a new idea we name "eTrust" and explore the graphical model that drives its operation. Alibaba wants to make online purchasing safer and more reliable by combining different kinds of trust ties and examining large networks of user interactions. This will hopefully boost customer happiness and help the company expand.

2. REVIEW OF THE LITERATURE

This survey reviews the literature on trust relationship prediction in e-commerce systems, focusing on Java programming language implementations. Alibaba uses Java for its backend systems, so it's important to grasp pertinent Java-based techniques.

1. Have faith in Java libraries and formalization:
• Examine studies that define trust metrics (such as transaction history and ratings) in e-commerce contexts that are pertinent to Alibaba.
• Examine Java libraries (such as JGraphT for network representation and Apache Mahout for recommendation systems) that make trust calculation and network analysis easier.

3. IMPLEMENTATION

Current System: Unsupervised Approaches. In unsupervised approaches, trust scores between two users are typically estimated by utilizing network architectures. Modern techniques for spreading trust ratings around network edges include Trust Propagation (TP) [10] and Tidal Trust (TT) [8]. Trust scores can also be estimated using a variety of unsupervised link prediction techniques, including Adamic/Adar (AA), Jaccards Coefficient (JC), and Common Neighbors (CN) [17]. Repeated propagation is avoided by these techniques. low (Graph density is just 3.13E-6), which poses challenges for the spread of trust ratings.

Drawbacks:

Because of the semi-supervised methods used in the current work, the system is extremely less secure.
In order to determine a trust score between two users, unsupervised approaches typically use network architectures, which are not more secure or reliable.

System Proposal & Alogirtham
The goal of the suggested system is to methodically investigate the issue on Alibaba's e-commerce site Taobao. With over 500 million users, Taobao is among the world's largest e-commerce platforms. In only one day, on November 11, 2017, sales on the platform reached a total of 25 billion US dollars. Our specific goal is to deduce reliable associations between Taobao users. The suggested system provides an example to highlight the issue at hand. Benefits: 1. The system is more trustworthy since three levels of normalization granularity—record, field, and value component—have been identified.

APPLICATION Modules Admin
The administrator will be able to view all users, view friend request responses, view all Alibaba Ecommerce users, and more in this module. See Every Product, See Every Purchase Information, See Every User Account Information, See Every Purchase Request, and See Product Score Outcomes.
• Online shopping
Alibaba ECommerce uses his or her user name and password to log in to this module. You can also view your profile, add products, view uploaded products, view all of your purchases, and view your total bill after logging in.
• Individual
After registering and logging in, the user can perform the following actions: View All of Your Friends, Requestfriend, View Friend Request, and View Profile. Account Creation/Management, SearchProducts, See All Purchases and All Recommended

5 RESULTS AND DISCUSSION

Admin login

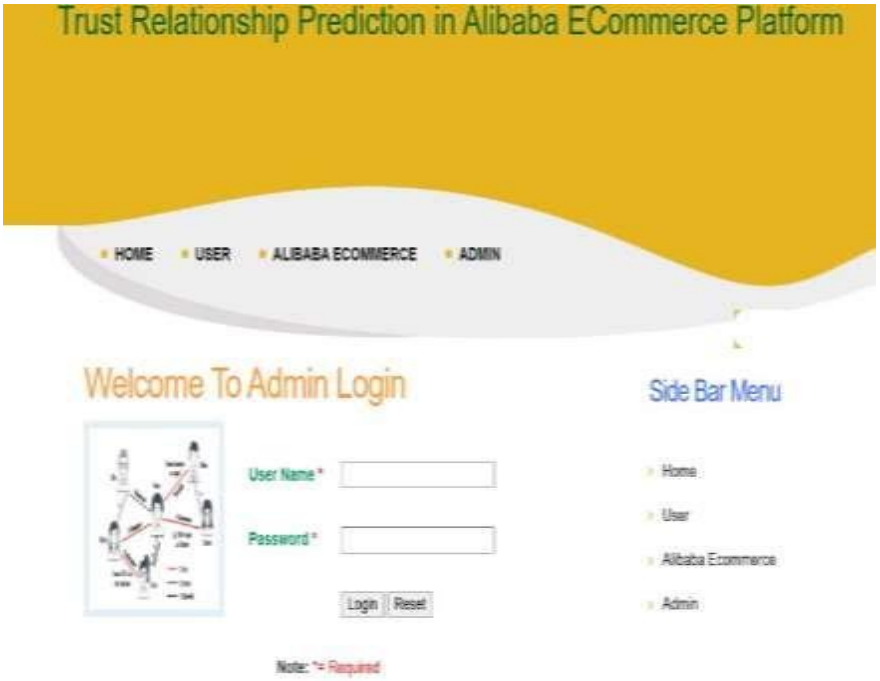


Figure: 5.1 Admin login

5.2Admin User Request and Response

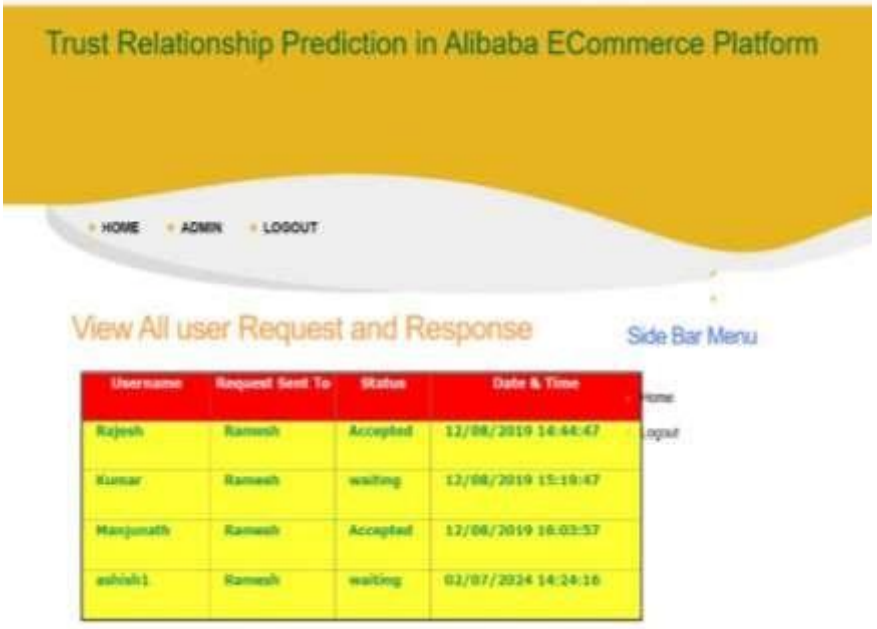
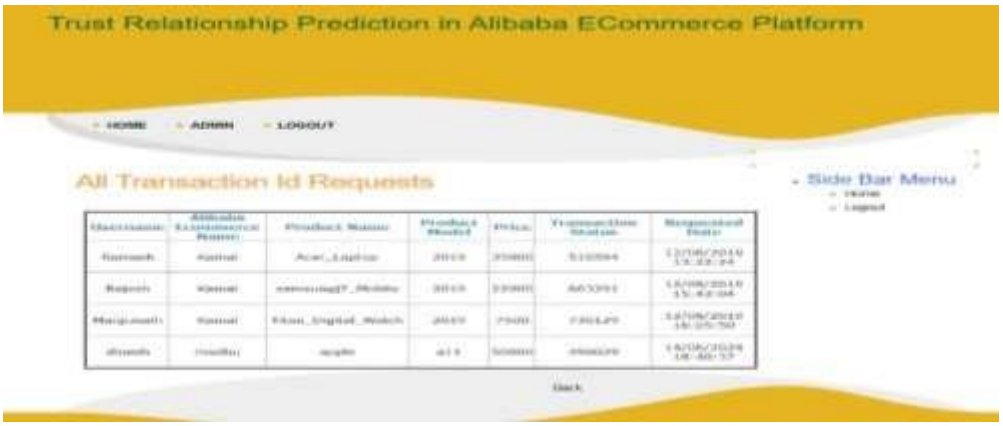


Figure: 5.2. Admin User Request and Response

Admin Transaction Id Requests



Admin Transaction Id Requests

Admin Products Lists

Admin Products Lists

User login

User login

User profile

User profile

User search products

User search products

User friend request

User friend request

E-commerce user login

6. CONCLUSION AND FUTURE WORK

The prediction of trusted trust relationships in Alibaba's e-commerce platform is crucial for enhancing user experience, promoting trust among participants, and ensuring the integrity of transactions. By leveraging advanced algorithms and data analytics, Alibaba can not only predict but also proactively manage trust relationships, thereby reducing fraud, improving customer satisfaction, and fostering a secure and reliable online marketplace. This approach not only benefits individual users but also strengthens Alibaba's reputation as a trusted leader in e-commerce globally.

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