TRUST RELATIONSHIP PREDECTION IN ALIBABA ECOMMERCE PALTFORM

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ABSTRACT

This paper introduces how to infer trust relationships from billion-scale networked data to benefit Alibaba Ecommerce business. To effectively leverage the network correlations between labeled and unlabeled relationships to predict trust relationships, we formalize trust into multiple types and propose a graphical model to incorporate type-based dyadic and triadic correlations, namely eTrust. We also present a fast learning algorithm in order to handle billion-scale networks. Systematically, we evaluate the proposed methods on four different genres of datasets with labeled trust relationships: Alibaba, opinions, Ciao and Advogato. Experimental results show that the proposed methods achieve significantly better performance than several comparison methods (+1.7-32.3% by accuracy;$p << 0.01$, with t-test). Most importantly, when handling the real large networked data with over 1,200,000,000 edges (Ali-large), our method achieves 2,000→speedup to infer trust relationships, comparing with the traditional graph learning algorithms. Finally, we have applied the inferred trust relationships to Alibaba E-commerce platform: Taobao, and achieved 2.75% improvement on gross merchandise volume (GMV).

1 INTRODUCTION

Trust is a cornerstone of any successful business transaction. In the realm of e-commerce, where buyers and sellers often operate anonymously, establishing trust becomes even more critical. Alibaba, a leading e-commerce giant, recognizes this challenge and has implemented innovative methods to predict trust relationships between users on its platform. This paper explores how Alibaba leverages the power of big data and machine learning to achieve this goal. We introduce a novel concept called "eTrust" and delve into the graphical model that underpins its functionality. By incorporating various types of trust relationships and analyzing vast networks of user interactions, Alibaba aims to create a more secure and trustworthy online shopping experience, ultimately leading to increased customer satisfaction and business growth.

Literature Survey

This survey examines existing research on trust relationship prediction in e-commerce platforms, with a specific emphasis on implementations using the Java programming language. As Alibaba utilizes Java for its backend systems, understanding relevant Java-based approaches is crucial.

1. Trust Formalization and Java Libraries:

- Explore research defining trust metrics within e-commerce contexts relevant to Alibaba (e.g., transaction history, ratings).
- Investigate Java libraries that facilitate trust computation and network analysis for trust prediction (e.g., JGraphT for network representation, Apache Mahout for recommendation systems).

3 IMPLEMENTATION STUDY

Existing System:

Unsupervised Methods. Unsupervised methods usually leverage network structures to estimate a trust score between two users. State-of-the-art methods such as Trust Propagation (TP) [10] and Tidal Trust (TT) [8] propagate trust scores along edges in a network. A number of unsupervised link prediction approaches such as Common Neighbors (CN), Adamic/Adar (AA) and Jaccards Coefficient (JC) [17] can also be used to estimate trust scores. These methods avoid iterative propagation. poor (Graph density is only 3.13E-6), which makes it difficult to propagate trust scores.

Disadvantages:

In the existing work, the system is very less secure due to Semi-supervised Methods.

Unsupervised methods usually leverage network structures to estimate a trust score between two users which is not more trustable and secure.

Proposed System & alogirtham

In the proposed system, the system aims to systematically study the problem on Taobao, the E-Commerce platform of Alibaba. Taobao has more than 500,000,000 users and is one of the largest Ecommerce platforms in the world—merely on 11/11/2017, the sales within 24 hours reach 25 billion US dollar. Specifically, we target at inferring trustful relationships

between users in Taobao. The proposed system shows an example to illustrate the problem that we are dealing with.

Advantages

- The system has more trust due to identification of three levels of normalization granularity such as record, field, and value component.

IMPLEMENTATION

Modules

- **Admin**

  In this module, the admin will do the following operations like **View** All User, View Friend Request Response, View All Alibaba Ecommerce User, View All Products, View All Purchase Details, View All User Account Details, View All Purchase Requests, View Product Score Results.

- **E-Commerce**

  In this module, Alibaba ECommerce logs in by using his/her user name and password. After Login also do some operations like View Profile, AddProducts, View Uploaded Products, View All Purchased Products and Total Bill.

- **User**

  The user will register and login and also can do the following operations such as View Profile, Requestfriend, View Friend Request, View All Your Friends, Create/Manage Account, SearchProducts, View All Purchases, View All Recomm

5 RESULTS AND DISCUSSION

screenshots

5.1 Admin login

Figure: 5.1 Admin login

5.2Admin User Request and Response

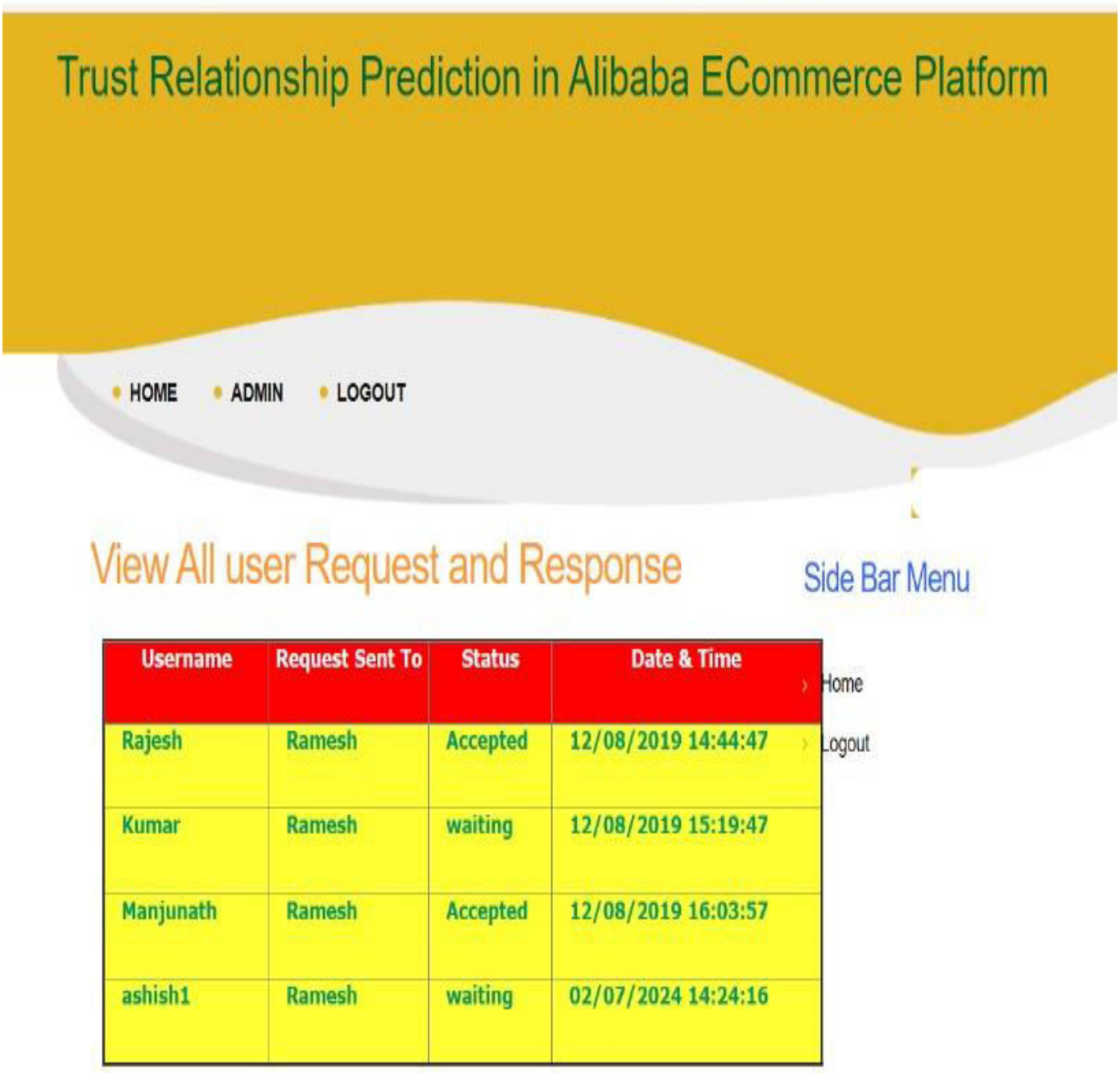


Figure: 5.2. Admin User Request and Response

Admin Transaction Id Requests

Username	Alibaba Ecommerce Name	Product Name	Product Model	Price	Transaction Status	Requested Date
Ramesh	Kamal	Acer_Laptop	2019	35000	510594	12/08/2019 13:22:24
Rajesh	Kamal	samsungj7_Mobile	2019	22000	663291	12/08/2019 15:43:04
Manjunath	Kamal	Titan_Digital_Watch	2019	7500	730129	12/08/2019 16:05:50
dinesh	madhu	apple	a11	50000	496029	14/06/2024 18:40:37

5.3 Admin Transaction Id Requests

Admin Products Lists

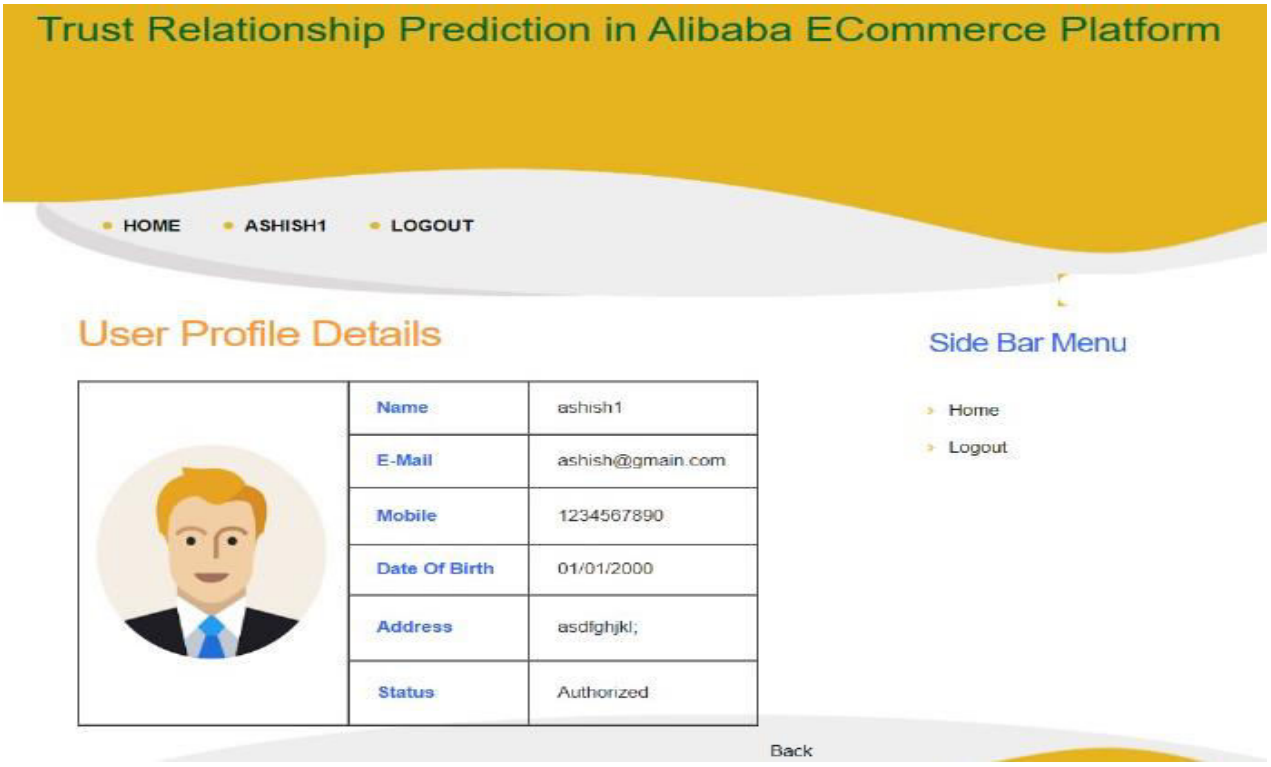
Alibaba Ecommerce	Image	Category	Product Name	Product Model	Price	View Details
Kamal		Electronics	Acer_Laptop	2019	35000	View Comments and More
Kamal		Electronics	samsungj7_Mobile	2019	22000	View Comments and More
Kamal		Electronics	Titan_Digital_Watch	2019	7500	View Comments and More
madhu		Electronics	apple	a11	50000	View Comments and More

5.4 Admin Products Lists

User login

5.5 User login

User profile

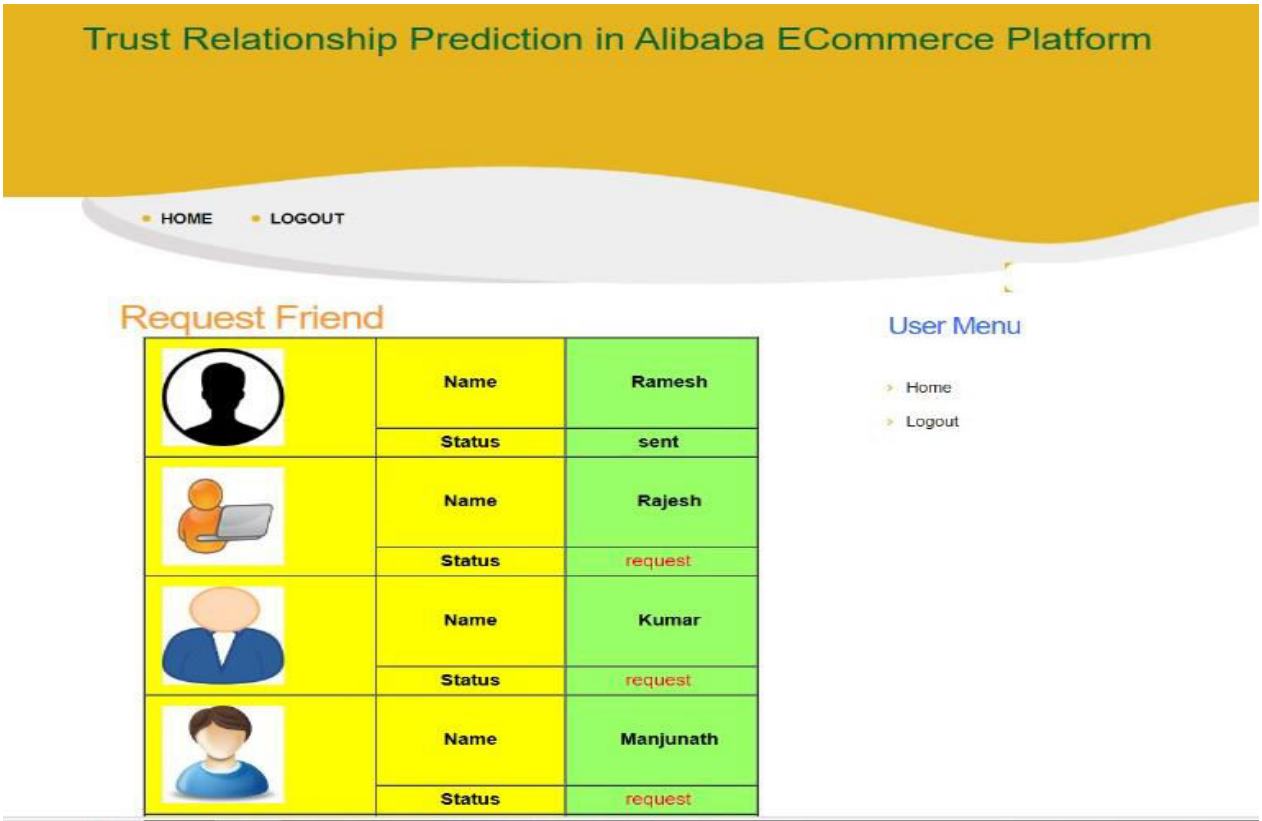


5.6 User profile

User search products

5.7 User search products

User friend request

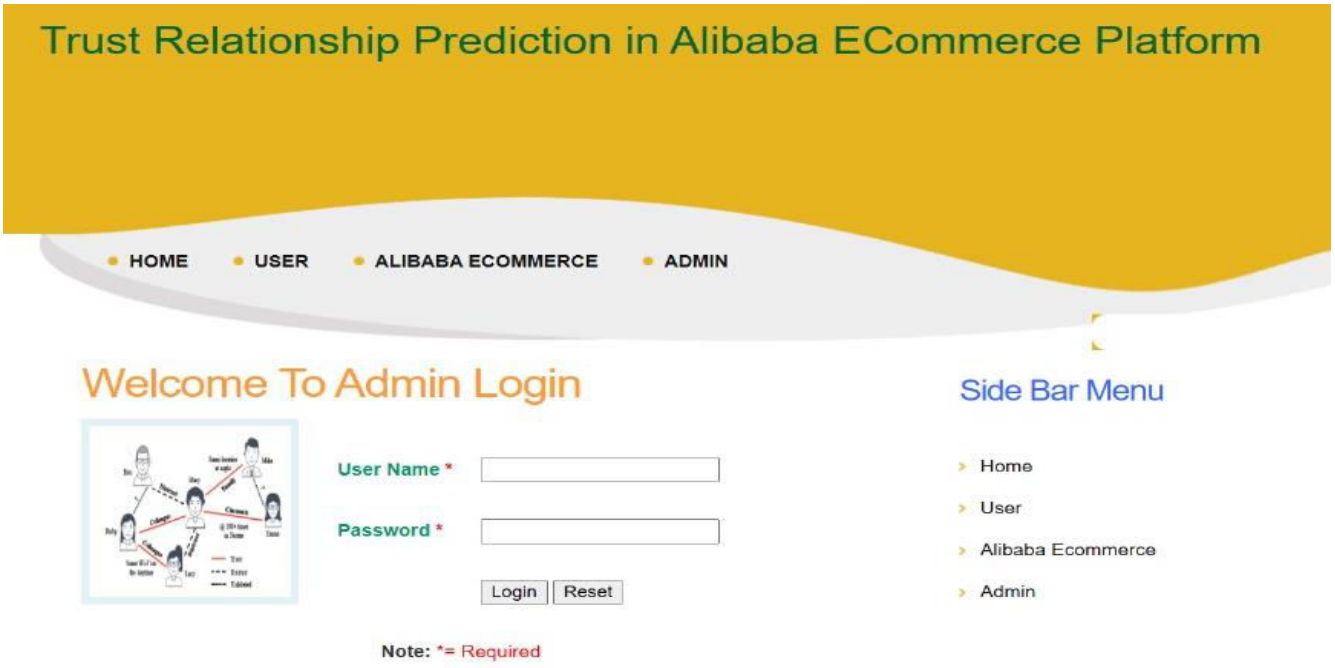


5.8 User friend request

E-commerce user login

5.9 E-commerce user login

E-commerce admin login



5.10 E-commerce admin login

6. CONCLUSION AND FUTURE WORK

CONCLUSION

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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