Digital Currency based Social Planning System

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ABSTRACT
Feels like going out, planning a party or attending an important event in your cities along with your friends and family? The chatting applications provide just a medium of discussion for planning of social events in lots of peep of notifications of conversation in inappropriate manner for planning event, texting back and forth and scrolling through endless conversation to see who is going where and where. It also does not provide pre-planning of events and places to visit information which leads to loads of confusions amongst the members. The social planning system overcomes all those issues by integrating venue determination, venue discovery along with member discussion on any individual or several plans on single platforms. Social planning system can be the new way of organizing, planning, communicating with your peers for any kind of group plan activity, big or small. It will provide convenience and simplicity to the users by combining functionality of several applications on one concise system i.e. application. The payments system will be of two types likely traditionally the normal transaction through bank synchronization and the other will be through Digital Currency transactions which are a convenient translation payment system. Digital Currency is created and held electronically. No one controls it.

Keywords
Digital Currency, Recommender system, Collaborative filtering, Event Scheduler

1. INTRODUCTION
We all need to break our daily routines from time to time. Just forgetting about our never-ending, To-Do list, leaving the office and resetting our minds. Feeling the wanderlust. Embark your journey and discover new worlds, collect inspiration and have the ultimate feeling of freedom traveling, our sweet escape that allows us to come back refreshed and with full charged batteries. Trying to organize friend meet ups in WhatsApp groups is a major pain point for people with large social circles, especially university students. Having five, 10 or even more people sending back-and-forth chats about when they are free and where they suggest meeting can quickly spiral into a never-ending slice of chaos. There is need to design a system i.e. software application that can help to organize social event, social outgoing plans, get-together, venue discovering along with consideration of invited peoples on specific plan. The plans can be completed with the help of Digital Currency payments. Digital Currency is not printed like any other currency. Digital Currency is legal in India. Digital Currency transactions are sent from and to electronic Digital Currency wallets, and are digitally signed for security. Everyone on the network knows about a transaction, and the history of a transaction can be traced back to the point where the Digital Currency was produced. Digital Currency transactions, however, don't require you to give up any secret information. Instead, they use two keys: a public key, and a private one. Anyone can see the public key (which is actually your Digital Currency address), but your private key is secret. When you send a Digital Currency, you sign the transaction by combining your public and private keys together, and applying a mathematical function to them. This creates a certificate that proves the transaction came from you. Social planning system can be used for instance-bachelor party planning, trip plans, college formal events, weddings, Get-away weekends, business functions, group dinners, concerts, last minute parties and many more.

2. LITERATURE SURVEY
Hong-Han Shuai, De-Nian Yang, Senior Member, IEEE, Philip S. Yu, Fellow, IEEE and Ming-Syan Chen, Fellow, IEEE proposed a Comprehensive Study on Willingness Maximization for Social Activity Planning with Quality Guarantee. [1] This paper proposed the automatic selection and recommend the potential attendees of a social group activity, which could be very useful for social networking.

Heming Cui, Suman Srinivasan and Henning Schulzrinne proposed a paper on ONEChat: Enabling Group Chat and Messaging in Opportunistic Networks. In this paper, ONEChat have used message multicasting on top of service discovery protocols to support group chat and reduce bandwidth consumption in opportunistic networks [2].

Huizhi Liang, Yue Xu, Yuefeng Li, Richi Nayak proposed a system named Collaborative Filtering Recommender Systems Using Tag Information. This paper include Recommender Systems is one of the effective tools to deal with social planning activities [3]. With the explicit rating and other implicit rating behavior such as recently viewed, click streams, and browsing history etc., the tagging information implies user's important personal interests and preferences information.

Weiyang Lin proposed an Association Rule Mining for Collaborative Recommender Systems. [4] This thesis has provided a novel approach using data mining of e-commerce for recommender system. The focus of the work is to apply association rule mining to collaborative recommender systems in which the articles are recommended to a user on the basis of other users' ratings for the articles as well as the similarities between this user's and other users' tastes.

Tobias Bamert, Christian Decker, Lennart Elsen, Roger Wattenhofer, Samuel Welten proposed Have a Snack, Pay with Bitcoin. This paper includes the Cashless payments that are ubiquitous and decentralized digital currencies like Digital Currency and are increasingly used as means of payment. Digital Currency network describes the transfer of a certain amount of Digital Currency from one account to another. Digital Currency are peer-to-peer electronic cash system that allows online payments to be sent directly from one party to another without using any intermediary. [5] Digital Currency are also used as an alternative currency.

Satoshi Nakamoto proposed A Peer-to-Peer Electronic Cash System? This paper describes how to solve the electronic cash issue, [6] we proposed a peer-to-peer network using proof-of-work to record a public history of transactions that quickly becomes computationally impractical for an attacker to change if honest nodes control a majority of CPU power. The network is robust in unstructured simplicity.

Dirk G. Baur, KiHoon Hong, Adrian D. Lee proposed a paper on Bitcoins: Currency or Investment? Digital Currency are mainly used as an investment and not as an alternative currency. Digital Currency intended purpose is as a medium of exchange although it may also be used as an investment. Digital Currency is held for investment rather than being used for transactions. [7]

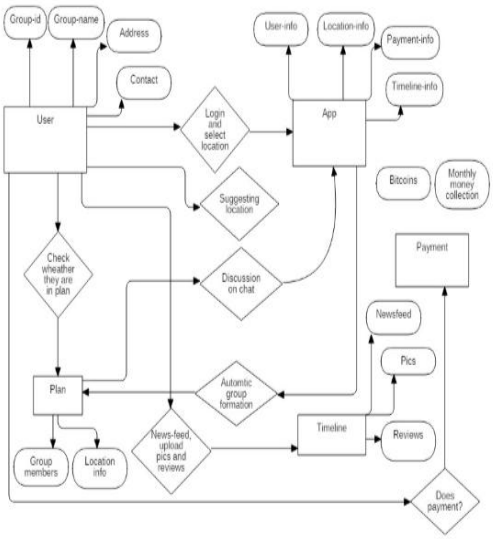
Greg Linden, Brent Smith, and Jeremy York gave a theory report investment on Amazon.com Recommendations: Item-to-item collaborating filtering. [8] This theory explained an algorithm that aggregates items from these similar customers, eliminates items the user has already purchased or rated, and recommends the remaining items to the user. Two popular versions of these algorithms are collaborative filtering and cluster models. Other algorithms including search-based methods and our own item-to-item collaborative filtering focus on finding similar items, not similar customers.

3. Proposed System

3.1 System Objectives

1. To design a system which helps in organizing social events amongst friends and families.
2. Focus on not only organizing events, together but to implement it according to user convenience when it comes to payment and equal contribution.
3. The system will not just suggest plans but will provide a friendly invest collection medium using Digital Currency through bank synchronization keeping transparency in money transaction.
4. To make identified vulnerability towards the collaborative filtering goals.

3.2 System Workflow



3.3 Algorithm

The goal of a collaborative filtering algorithm is to suggest new items or to predict the utility of a certain item for a particular user based on the user's previous likings and the opinions of other like-minded users. In a typical CF scenario, there is a list of m users U = {u1u2,...,um} and a list of n items I ={ i1,i2,...,in}. Each user ui has a list of items Iui , which the user has expressed his/her opinions about. Opinions can be explicitly given by the user as a rating score, generally within a certain numerical scale, or can be implicitly derived from purchase records, by analyzing timing logs, by mining web hyperlinks and so on [28, 16]. Note that I ui $\subseteq$ I and it is possible for Iui to be a null-set. There exists a distinguished user ua $\in$ U called the active user for whom the task of a collaborative filtering algorithm is to find an item likeliness that can be of two forms. Prediction is a numerical value, Pa,j, expressing the predicted likeliness of item i j $\in$ Iua for the active user ua. This predicted value is within the same scale (e.g., from 1 to 5) as the opinion values provided by u a.

Recommendation is a list of N items, Ir $\subset$ I, that the active user will like the most. Note that the recommended list must be on items not already purchased by the active user.

Item-based Collaborative Filtering Algorithm

A class of item-based recommendation algorithms for producing predictions to users. Unlike the user-based collaborative filtering algorithm discussed in Section 2 the item-based approach looks into the set of items the target user has rated and computes how similar they are to the target item i and then selects k most similar items{i1,i2,...,ik}. At the same time their corresponding similarities{si1,si2,...,sik}are also computed. Once the most similar items are found, the prediction is then computed by taking a weighted average of the target user's ratings on these similar items.

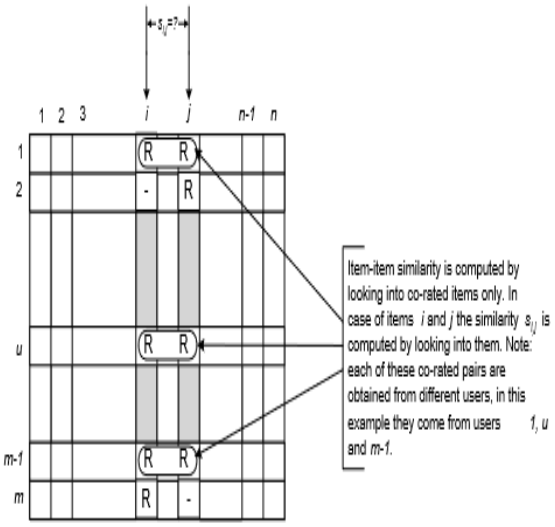
Item Similarity Computation

One critical step in the item-based collaborative filtering algorithm is to compute the similarity between items and then to select the most similar items. The basic idea in similarity computation between two items i and j. Item-item similarity is computed by looking into co-rated items only. In case of items i and j the similarity si,j is computed by looking into them. Note: each of these co-rated pairs are obtained from different users, in this example they come from users 1, u and m-1. The users who have rated both of these items and then to apply a similarity computation technique to determine the

similarity si,j. here the matrix rows represent users and the columns represent items. There are a number of different ways to compute the similarity between items. Here we present three such methods. These are cosine-based similarity, correlation-based similarity and adjusted-cosine similarity.

Correlation-based Similarity

In this case, similarity between two items i and j is measured by computing the Pearson-r correlation corr i,j. To make the correlation computation accurate we must first isolate the co-rated cases (i.e., cases where the users rated both i and j) as shown in Figure 2. Let the set of users who both rated i and j are denoted by U then the correlation similarity is given by



Cosine-based Similarity

In this case, two items are thought of as two vectors in the m dimensional user-space. The similarity between them is measured by computing the cosine of the angle between these two vectors. Formally, in the m ×n ratings matrix in Figure 2, similarity between items i and j, denoted by sim (i, j) is given by

$$sim(i,j) = \cos(\vec{i},\vec{j}) = \frac{\vec{i}\cdot\vec{j}}{\|\vec{i}\|_2 * \|\vec{j}\|_2}$$

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3.4 System Architecture

1. User profiling: User must register on system. In this phase all users have to store their data in database.
2. User's data and all information of the user's previous activity are collected and Digital Currency related data is stored.
3. Create a plan-This phase selects the type of activity through a list. Here the friend list is created from the phonebook or the social media friend list. The description of the events date, time, place is selected and the invitations are send to the friends.
4. Event Tracker-User checking and user availability is done. The activity and places are selected using voting mechanism. Timeline is used to track the social activity and a tracker is used to keep track of activity.
5. Event Scheduler- Updating the change in the plan of event area or time. Also the access to maps is provided to select places and event area.

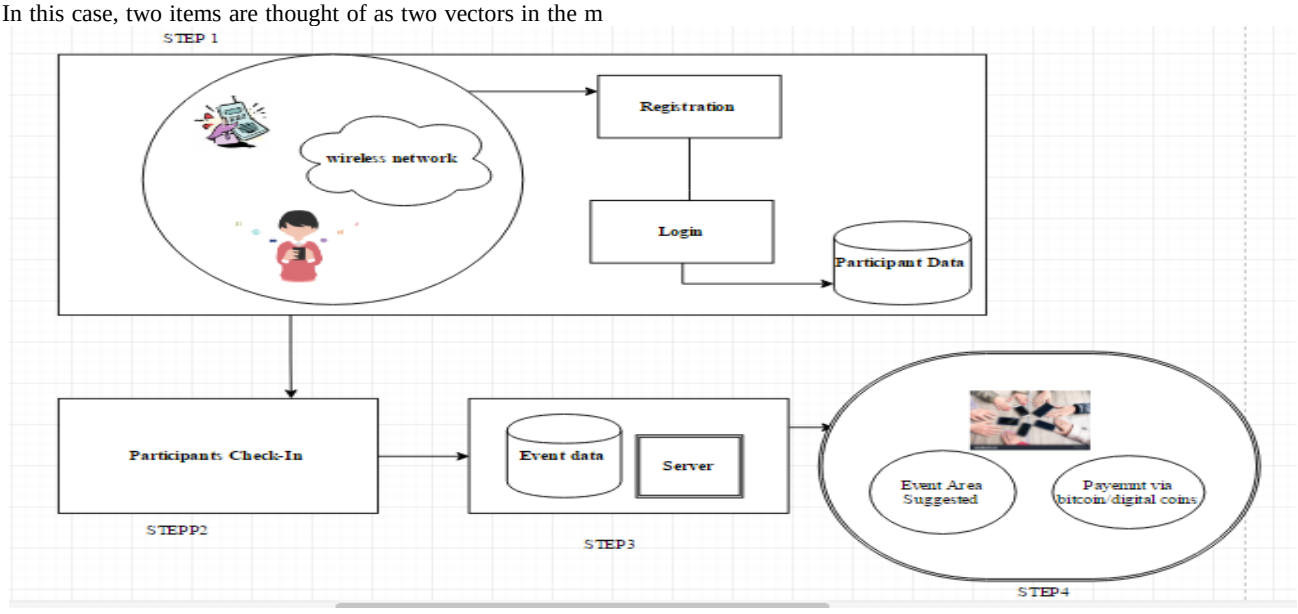

Fig. System Architecture

4. CONCLUSION

This system will be a new way of organizing, planning and, communicating with the peers for any kind of group activity, big or small. It will provide convenience and simplicity to its users by combining the functionality of several apps into one concise app. There will be no massive email chains and group and text every time when the friends try to do something together, then this system application will be exactly fulfilling users need. A single platform on the mobile that will allow to plan and socially connect to the group for a perfect holiday, occasion, movie or party plan. Absolutely no calls, emails, messaging will be required, which will be thereby reduced the time for planning. With this system all will be always updated and will never be lagging behind. Plus there is as amazing social networking tool to keep the friend in sight, to stay in

touch and even improve the friendship.

5. ACKNOWLEDGEMENT

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