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An Allegiance Based Approach for Controlling Social Web Services Operations

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Abstract:

Regular web services are different from social web services, activities under social web services include maintaining large number of contacts and groups with some customized contacts. The outcome of social web service actions may result in violations. To avoid such violations allegiances are being introduced to social web services. Two types of allegiances are determined. Firstly, Communal allegiance that guarantee the correct usage of social network where social web services log in, that focus on managing the allegiances in respective network and effective usage of allegiances by members in the network. Then, Trade allegiance that guarantee the proper development of composite web services stating that allegiances based on user requests and service that provide to user. By supervising, allegiance assaults and activity inhibition are detected. To handle disputes or deadlocks while processing requests, Banker's algorithm is implemented such that consistency of allegiances is maintained.

Index Terms – Allegiance, assault, inhibition, social networking, Social web service, supervising.

1. Introduction:

Web service is a software application recognised by URI that supports direct interactions with other software applications via internet based applications. Usually web services exhibit three properties such as:

(i) independent to specific platforms

(ii) generally developed in case of inter organizations
(iii) during compositions it is easy to integrate into existing applications.

The synergy between social computing and service-oriented computing has resulted in social web services. Social computing is use of information and communication technologies that consider social context. Where service-oriented computing is an application that works on a rule that "one provide services for some other requests" and "one require services that some other else may provide". Compared to regular web services these maintain number of contacts and shared groups for communication

Social Networks let users interact and share information via profiles. As a advanced feature social networks expose to web services that allow third-party sites to access information on profiles and provide services to users via easy communication.

A web service that sign up through social network is first exposed to social network authority who manages that network and then to members in the network. To complete the activities of social web services in social network three components are designed, communal composer to develop composite web services, communal executor assess relations on composite web services and communal monitor replaces failing web services to avoid action terminations.

2. Related work

Identifying and selecting the best suitable web service based on user service request is a hefty task as there are large number of services available with the work of J. Al-Sharawneh and M.-A.Williams[1]. The effective services may be extracted by aggregation of semantic web, social networking and supporting systems. Semantic web service provide identity, composition and execution of dynamic web services. Based on semantics there could be multiple service results, which may differ by meaning of requested service. To filter variable services we need a contextual search for requested services.

Context characterizes communication between human, application and environment with the work of Z. Maamar, D. Benslimane, and N.C. Narendra [3]. Context has ability to detect and respond to changes in software application. By this the resulted web service is a exact web service preferred by user. By implementing context in composition, it helps for decision-making for accepting or rejecting from composition. Context aware web service results based on the meaning of the service requested.

A social network provide communication among users and share information in groups with the work of M. Nam Ko, G.P. Cheek, M. Shehab, and R. Sandhu [6]. Beyond communication among human, it provide other services to share. Sharing a service via social network provide awareness to users. Based on user requirements web services are organised. Services can be directly used via social network, without separate login and detailed application. The actions on provided web services are performed by group of users.

As social networks provide various services, user can access by service request with the work of Z. Maamar, N. Faci, Q.Z. Sheng, and L. Yao [4]. To perform operations on particular application it require service from other application. This lead to composition of web services, which benefits reusability and easy access. Services can be customized according to user requests. This benefits the user to complete their action in a single flow.

3. An approach to social web services based on Allegiance

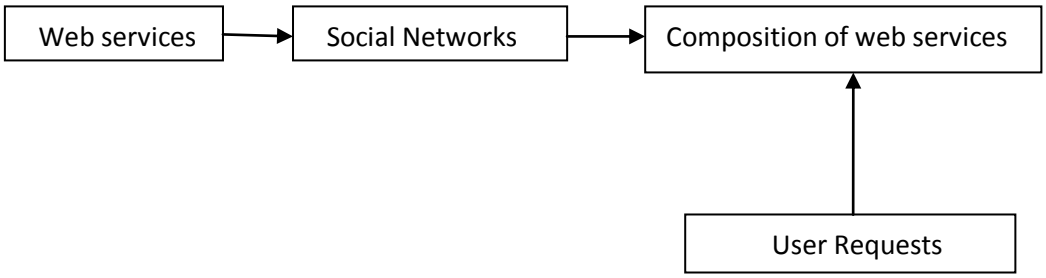

Fig: Allegiances for social web services operation

Interactions among these components lead to development of allegiances. When a web service sign up in social network it becomes social web service. These are confined to communal allegiances. Trade allegiances connect social web services to compositions. User requests from social network are accessed through compositions.

3.1 Communal Allegiance towards social networks:

If a new web service exist in social network, it is exposed to the members in the social network. Provinces related to communal allegiance are considered as:

Prov1: If a user details are to be collected from social network, purpose of detail collection must be informed to detail's owner.

Prov2: The details shared via social network must be true.

Prov3: All the operations of a social network and its services must work correctly.

Prov4: There must not be any pending in service requested before logging off social network.

Prov5: The details posted in public by the members of social network must not be revealed to non-members of social network.

3.1.1 Assaultand Inhibition Handling

AProv1: Assault may occur when the details collected are non-public. Inhibition may arise, if the details are collected for substitution or composition.

By supervising, if collected details are not used as expected, access to track must be provided. If tentative access is conformed using logs, expelled from social network.

AProv2: If the details posted by user in social network are incorrect, assault arises.
By supervising, if accuracy of data is not conformed, user is expelled from socialnetwork.
AProv3: If the operation of any action fails, assault takes place. Inhibition is a condition where the operation do not work.If the failure of operation is repetitive and conformed using logs, expelled from social network.
AProv4: Signing off from social network without social network approval causes violation and having pending assignments lead to prohibition.
By supervising, enforced signoff is informed to other peers in a network.
Incomplete assignments are tracked and terminated.
AProv5: User details revealed to non-members of social network leads to assault and if a condition that disapproval of detail collection fails inhibition takes place.
The access to non-members of social network are denied, id details collected without approval is conformed through logs, will be expelled from social network.

3.2 Trade Allegiances towards compositions:

A web service enters into social network referred to as social web services. To perform different activities we go for composition of web services.
Prov6: In compositions details are exchanged, but the expected usage of details should be reported to user.
Prov7: The details that are shared with all the components in the composition should be correct.
Prov8: During operation if a peer fails, the action should be completed using other service.
Prov9: During collaboration proper functioning must be done so as to complete operation and maintain safety.

3.2.1 Assault and Inhibition Handling:

Aprov6: If details are submitted without requesting the recipient, assault takes place. If the details are used without approval of details owner, it could be an inhibition.
If inappropriateness is found by supervising, activities are rejected. Then there was no expected usage of details, can provide privilege to query.
Aprov7: During composition if incorrect details are exchanged, it could be an assault.
For the self-details shared in composition, veracity is checked. If accuracy is not conformed, expelled to use.
Aprov8: If a peer fails during an operation is being performed, if substitute peer could Not fulfil failing peer it can be an assault.
If the failing peer is not fulfilled, expelled from social network.

Aprov9: In composition of social web services when collaborator is appended without Proper functioning, violation takes place.
While tracking, if improper functioning takes place, expelled from the network.

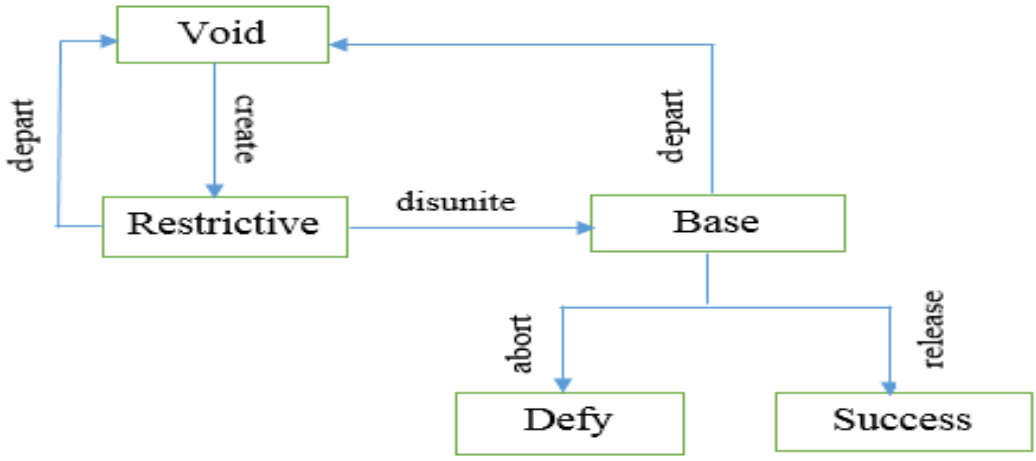

Fig : Allegiances Life cycle

Conditions can also be linked to allegiances which result in conditional allegiances. Life cycle of allegiances has states void, restrictive, base, defy and success with operations create, disunite, depart, abort and release. Initially it is in null states, when a request is processed create operation is executed and enters into restrictive state. If a request holds restriction, enters into base state by executing disunite operation. On termination of operation, depart takes place and lead to null state. Then abort operation is executed making allegiance to take on to defy state or successful completion of operation lead to execute release operation and take on success state.

By an approach to social web services based on allegiance, there can be a situation of deadlock occurrences which lead the allegiances to be inconsistent. While processing number of requests to avoid such deadlocks or disputes, Banker's algorithm is to be used, such that consistency of allegiances is maintained.

1. If Rq<Nd, go to step 2. else, raise an error, has exceeded its maximum claim.
2. If Rq< Av, go to step 3. else, must wait, since services are not available.
3. Then by modifying the states are as follows:

Av= Av-Rq;
Al = Al + Rq;
Nd = Nd – Rq;

where,
Rq→ Request
Nd→ Need
Av → Available
Al → Allocation

4. Experiments

To carry out experiments, we consider Hotel web service and compositions in hotel web service include Travel planner that contain cab service, flight booking and train booking. First a Hotel web service sign up in social network and authenticated to become a social web service. Then activities performed on social web service are confined with provinces of one allegiance. To book a room in hotel, hotel web service takes data from social network. It uses accommodation component to book a room. If accommodation component fails, book room component is used instead to fulfil the activity. Details are not revealed to non-public members. If private details such as personal details or place of booking can't be viewed by members of social network, if trying to access those details are conformed using logs then user will be blocked or expelled from social network. Then we use composition of web services to book cab service, after all the activities are conformed, request must be completed by submitting. Trying to sign off from social network without completion of activity notifies the user. While processing requests from social network, multiple users request at a time. When more users request to perform same operation to conform assuming that, if user1 and user2 both need to book same room, then time (Request processed by FIFO screening) is considered by which based on availability of request, activity is conformed. Similarly, for all the requests provinces are considered.

5. Conclusion:

Two allegiances are used to control social web service operations. Communal allegiance that guarantee the correct usage of social network where social web services log in, that focus on managing the allegiances in respective network and effective usage of allegiances by members in the network. Then, Trade allegiance that guarantee the proper development of composite web services stating that allegiances based on user requests and service that provide to user. By supervising, allegiance assaults and activity inhibition are detected. To handle disputes or deadlocks while processing requests, Banker's algorithm is implemented such that consistency of allegiances is maintained compared to the previous work.

Directions to work in future are identifying additional allegiance assaults and activity inhibitions. Drawing rights from real networks to implement social web services could be a better approach.

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