

Mobile Based Social TV Application on Android Operating System

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Abstract – People watch television for entertainment and knowledge purpose. Imagine watching a Cricket match with your friends even though they are not with you. Social television gives you the facility to share your views of shows you are watching and also socialize at the same time. But the problem with the social television available now in most of the countries is, they don't have enough bandwidth of internet and so service providers are also limited. The "LounGer", the application we are developing targets mobile smartphones as well as tablets who use relatively lower bandwidth. The purpose of choosing Android platform is that most of the smartphones and tablet pc's now a days run on Android operating system. LounGer facilitates its users with features like various social activities which include profile view, shout-out message, chatting, and friends' activities. Also search activity in which one can search for basic plot, storyline and cast of a movie or television show, their rating and reviews by the user. LounGer also keeps schedule of shows on numerous television channels. In conclusion, this will be a very useful application which will be portable, cost effective and fun.

Keywords – Android; Bandwidth; Smartphones; Social TV; Operating System

1. Introduction

Mobile broadcast TV combines the two best-selling consumer products in history - TVs and mobile phones. Current market research indicates high future demand for broadcast services. For example, the market research firm Data monitor forecasts exponential growth of the mobile television market. In 2007 data monitor forecasted by 2009, 69 million people worldwide are expected to subscribe to mobile television services, generating total expected revenue of \$5.5 billion [2]. The optimistic forecasts are accompanied by growing number of technological and commercial trials in Europe, which confirm certain Mobile TV qualities as key user benefits: mobility (= location-independence) and flexibility (=time-independence) [3]. Furthermore, user studies indicate that interactivity will add significant value to mobile broadcast service offers [1].

However, when watching TV, we might end up watching a boring movie or a TV show it is unknown to us. Also we get bored soon enough when there is no one with us to give company. Using LaunGer, we will be able to find out everything about the show in a few clicks. At the same time, we can interact with the friends online.

Features of this proposed application over the applications which are present now in the market are that the use of internet bandwidth is very less. Also this application is user friendly and having interactive user interface.

In this paper, we discuss the different aspects why the application is needed, the functionality, working and the demo of the same.

2. Evolution of Social TV

The term Social TV seems to be a tautology. Since its inception television watching has been a social activity that gathers millions of people around their television sets. Families used to watch television together in the living room, making television a social medium in the small - family - and in the large - society. Later, societal pattern changes (e.g., nomadic behaviour) and technology innovations (e.g. cable TV, low-cost television sets) have fundamentally transformed how television is watched. Currently, several households have almost as many television sets as rooms and the TV offering is so broad that it is not uncommon that different people did not watch the same television program last night, with some exceptions.

Computer-Mediated communications are becoming an indispensable part of our daily interactions. Until now, high quality videoconferencing has been restricted to the office setting, mainly in the form of carefully architected shared meeting rooms. Current developments in networking bandwidth and computing power available in the home enable studying the applicability of this technology to the domestic setting, where Skype TV and CISCO's home. Telepresence14 are pioneers. In parallel to the integration of social networking into the television environment, in the last few years there have been successful efforts in providing a direct communication link between separate households watching television together [4].

2.1 Community Building

Community building refers to the activity of sharing thoughts, comments, and impressions about television programs with a large community. Followers of a specific show normally comprise such community. In some cases games (e.g., NBA Real Time Fantasy) and other

immersive activities are provided by the television channel or by individual followers of the show. In the past, successful approaches included the use of telephone calls for deciding the outcome of a show – Big Brother or the Eurovision song contest are good examples – but lately many television channels are providing specific Web pages with Facebook and Twitter updates. TV Chatter and Starling TV are two recent examples of community building, where comments related to a television program are gathered and aggregated. In most of the cases such aggregation is done via an external channel, with no effect on the program. Some exceptions exist like NM2 [5] where comments of the viewers were used for interactively affecting the storyline of a drama series and Current TV’s “Hack the Debate” that showed Tweets onscreen during the televised debates of the last USA residential election. The mobile phone and laptop are the most commonly used devices, since it is more convenient to use than a television remote control. A salient feature of this category is the network reach, where large audiences of strangers congregate around a television program. Text tends to be the most common communication modality. Even though the comments are synchronized with the show, synchronization is not a key feature because time-shifting is common and people might add/read comments whenever they want [4].

2.2 Mobile Social TV as New Service Class

The last decade has witnessed an incremental interest in what we call Social TV, with a number of systems offering synchronous communication means between people watching television in different locations. Some examples include Social TV from Motorola [6], ConneCTV from TNO [7], and AmigoTV from Alcatel-Lucent [8]. In parallel with these systems other solutions for asynchronous communications in the form of content recommendation and TV content sharing have been proposed (e.g., Ambulant Annotator [9], CollaboraTV [10], and Watch-and-Comment [11]). Lately, together with the success of social media and social networking, a number of products that combines TV content with social networking are appearing (e.g., TV Chatter, Starling TV, Miso).

2.3 Mobile Social TV program formats

Many current social TV applications are generic systems, which can be used for a range of programs. Already, some applications (e.g. Sofanatics) target a specific genre such as sports, and are tailored to support social interactions around that specific kind of content. Future social TV applications could take this a step further and be tailored to one specific program. The category of community building is the most obvious, and has to some extent already been exploited. Popular programs like ABC’s “Lost” have gathered a community of avid fans who discuss the contents or actors at great length in online discussion boards. More recently, the Fox show Glee links fans of the show (‘Gleeks’) via Facebook, Twitter, and a dedicated iPhone and iPad

application, which allows viewers to sing along with the show’s songs and share this with friends or other fans worldwide [4].

We think it is possible to also apply other aspects of our framework to these programs. Ideally, program formats are even created which inherently include social features. Television shows can implement these social features to match the content of the show as closely as possible. An added benefit of program specific social TV applications is that they easily can take into account the properties of the genre [12]e.g. by focusing on synchronized interactions for social genres such as quiz shows or soap operas, and synchronized interactions for less social genres as movies and documentaries [13].

3. Need of a Social TV Application

Television is the mostly used for Entertainment. Being humans, we like to gather and socialize. However, in the past few years, the life has gone fast, and people don’t get enough time to meet. The social life of people has reduced to a large extent in today’s world. LounGer is such an application on the go, by using which anyone can stay in touch his friends anytime. Conventional TV fails to tell much information about what we are watching. Here our app will be very helpful in getting all the information like cast, story, ratings, etc. using which one can decide whether to watch the particular show or not. Also consider watching the TV alone but interacting with friends using app, sharing our views, rating the shows, etc.

The applications which are available in market face many problems as follows:

- They use high bandwidth.
- Most of them don’t provide proper show information and ratings.
- They do not provide friend interaction options like chatting, comments, etc.
- Many of them are having clumsy interface.

Our application will be a revolutionary step towards the way we watch TV and socialize.

4. Android as a development platform

Salient features of Android as a development platform:

- Open Source.
- Linux based kernel insures security.
- Improved performance.
- External devices support.
- External storage support.
- Multi touch support.

The share of Android operating system is more than 50% by a recent survey in March 2011 by Neilsen Corporation (Figure 1). Also as Android supports Java, it was appropriate to choose Android as the developing platform.

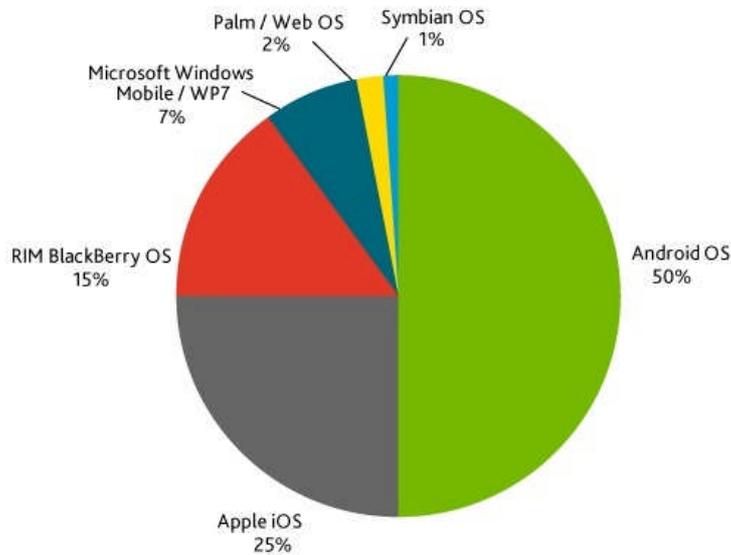


Figure 1. Class Diagram for Caching Simulator using FIFO, LRU and LRU with related content

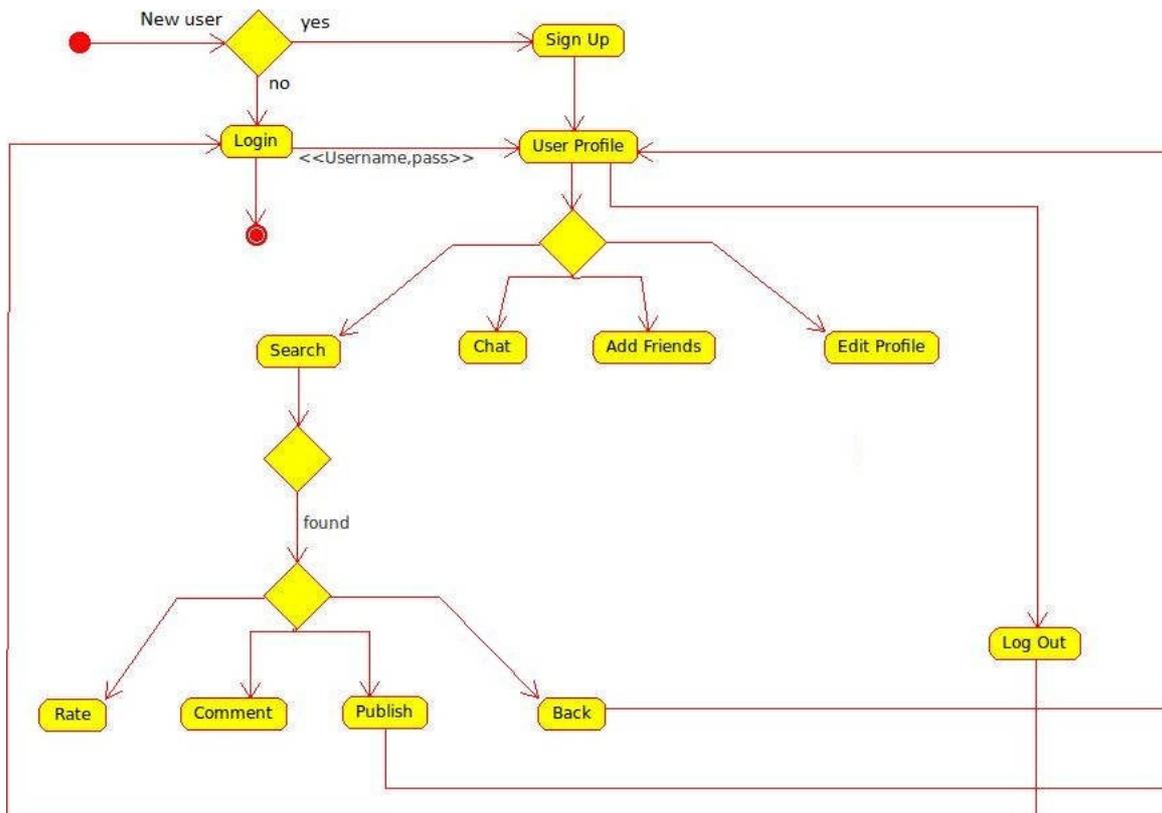


Figure 2. Flow Diagram of LounGer

5. Mobile Social TV Interactivity Design Space

Mobile applications and services are characterized by immediacy, intimacy of the user experience and

considerable technical constraints, particularly concerning the user interface. Therefore, we propose that any practical investigation of Mobile Social TV should initially focus on real-time low-bandwidth communications in order to avoid unduly implementation complexity. Moreover, real-time communication is a main driver of social presence, because it creates a level

of intimacy unlike asynchronous forms of communication, particularly in mobile contexts [14]. Therefore, we chose to prioritize the following two dimensions for our initial investigations: verbal/non-verbal and one-to-one/many. Representative interactivity features are text-messaging/chat with presence and awareness, emoticons, Joint Zapping and Sharemarks as shows in Table 1.

Table 1. Mobile Social TV Interactivity Features as prioritized by the authors

Dimensions	Verbal	Non-verbal
One-to-one	SMS	Joint Zapping
One-to-Few	Private Text Chat	Sharemarks
One-to-many	Text- chat in public TV chat rooms	Presence, Emoticons

While chat and presence are common P2P features, the matrix also exhibits two more unusual elements: JointZapping and ShareMarks. JointZapping synchronizes the current channel of two receivers, in order to ensure that peers keep on watching the same content. Associated with communication, this offers users the possibility to negotiate about the jointly watched program. This would address the social activity of joint TV planning reported by Turner and Cairns [15]. For looser coupling, ShareMarks serve as “links” to the show/channel currently watched, which a user sends to another peer e.g. via SMS/MMS. If accepted by the receiving user, her TV viewer application switches to the referenced program.

6. User Interface of LounGer

The Application working is so simple. The basic requirements for running the applications are an Android smartphone and Internet connection. Figure 2 shows the flow of the application.

- 1) After starting the application, the first thing user sees is a login page. If the user is an old user then he can directly log into his account. Else he has to create a new account. After that he is redirected to the Home screen.(Fig.3)

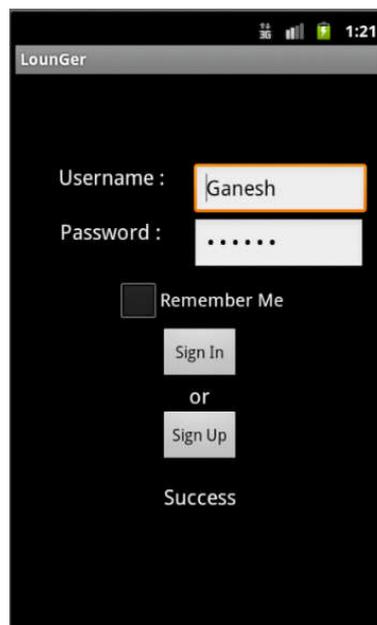


Figure 3. Login Screen

- 2) This is the main interface where the user will see number of options in his account like Activity, Profile, Chat, Shows & Movies, Friends and Notifications.(Fig.4)

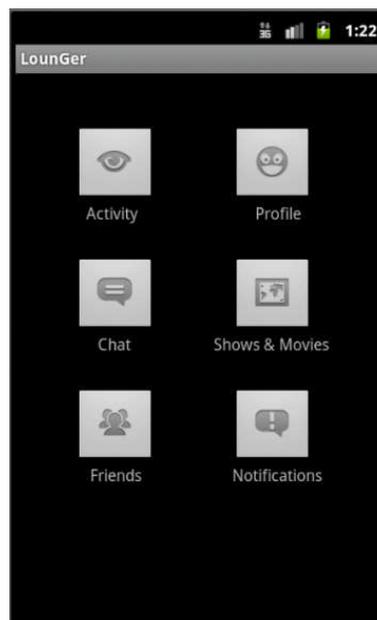


Figure 4. Home Screen

This is the page from where user can modify all his settings and browse the whole application.

- 3) Activity tab gives the information about activities performed by friends such as their likes, comments.
- 4) Profile tab allows the user to modify his personal account settings, name, profile picture, shout out message, etc.(Fig.5,6)

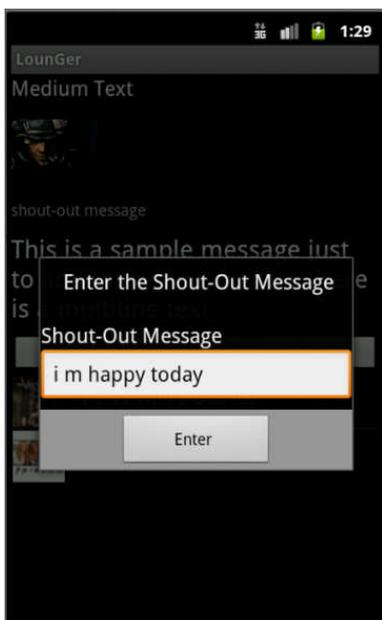


Figure 5. Profile View

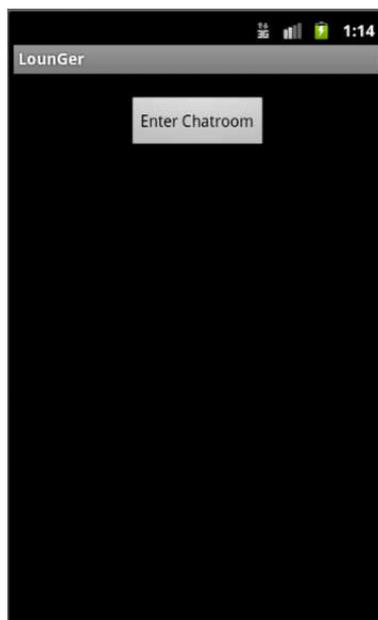


Figure 7. Chat Option

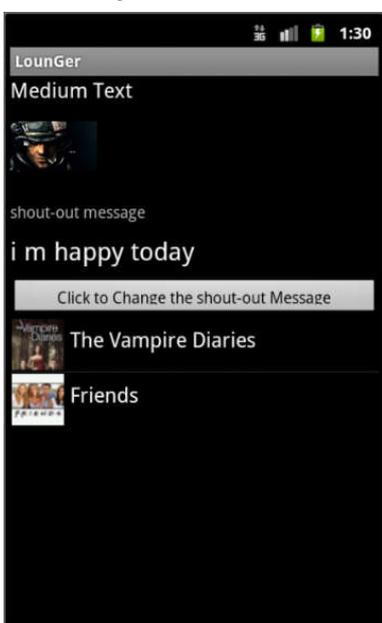


Figure 5. Profile View editing

- 6) Shows & Movies is the most interesting feature in the application where the user can search for movies, TV shows; see what the show is all about, rating of the show, comments made by other users to the show. Also he can rate and comment about the same.(Fig.9,10,11)

- 5) Chat shows all the online friends whom with user can have chat.(Fig.7,8)



Figure 8. Chat Room

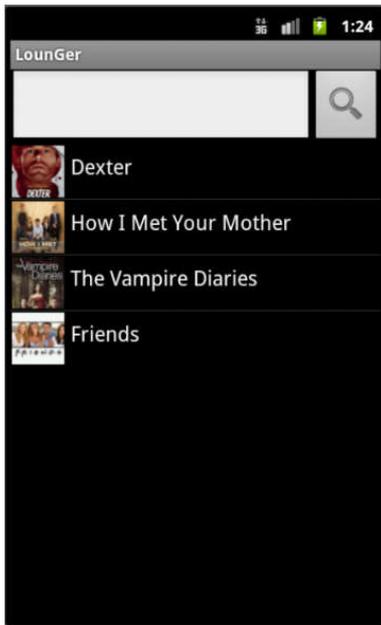


Figure 9. Shows tab

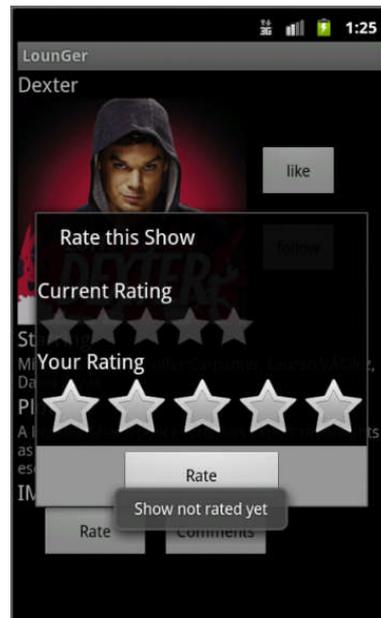


Figure 11. Rating to Shows

- 7) Friends tab is provided to manage the friends of the user. Adding new and sending message to old ones.(Fig.12)



Figure 10. Show Information

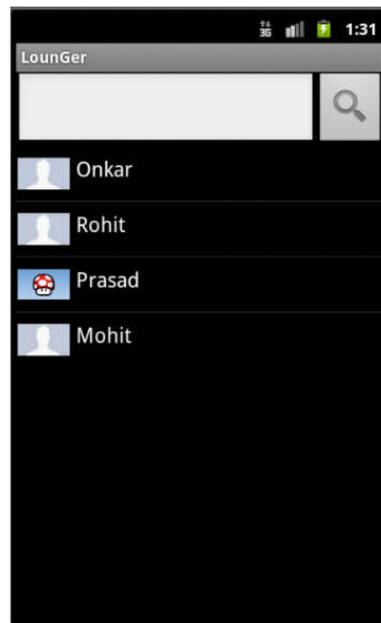


Figure 12. Friend list

- 8) Notifications tab gives a briefing of what is going on around. The friend requests can be managed here only. Also user gets to know which show his friends are currently watching.(Fig.13)

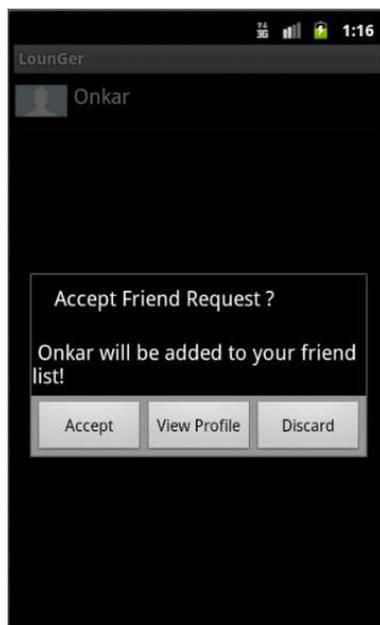


Figure 13. Friend request & notifications

In this way, we intend to do the application. Advantages of LounGer are as follows:

1. User friendly GUI
2. Social TV features on the go
3. 24/7 connectivity
4. Voice search

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7. Future Scope

In the upcoming versions of this application, live streaming of TV may be done. Also Social sites integration of sites like Facebook, Twitter, LinkedIn, etc. can be performed. Another concept which may be implemented in upcoming versions is using text messaging to update the status and other information in the account. When the user is in a low network area and he is using GPRS connection, it may be problematic to access. Using text messaging, user can update his account such as what he is watching, updating shout-out message, etc [16-18].

8. Conclusion

The design and implementation of a novel mobile-based Social TV application is presented. The design consists of a mobile phone with Android OS versioning 2.3.3 and above, along with the continuous Internet access. The application can be installed not only on smartphones but also on tablet devices having Android. This app may also be used to telecast TV schedules, sports events such as Cricket, Football, Baseball, etc.

Such a design transforms a mobile phone or tablet into an entertainment hub. It is noted that the proposed system is not restricted to television; it can be applied directly to remote control of many industrial devices. As a part Of Bachelors of Engineers Project it is only feasible to work upon only one platform, so we are working only on Android. Even on Android we are working on a particular version of Operating system i.e. Android 2.3.x.

References

- [1] Raimund Schatz, Siegfried Wagner, Norbert Jordan, "Mobile Social TV: Extending DVB-H Services with P2P-Interaction", IEEE Second International Conference on Digital Telecommunications, 2007.
- [2] Datamonitor, Technology developments in the European digital TV Sector, London, 7 July 2006.
- [3] UMTS Forum, "Mobile TV: The Groundbreaking Dimension", Joint Mobile Group Whitepaper, <http://www.umts-forum.org>, November 2006.
- [4] Pablo Cesar, David Geerts, "Past, Present, and Future of Social TV: A Categorization", IEEE, pp.347-351, 2011.
- [5] Ursu, M. F., "Interactive TV narratives: Opportunities, progress, and challenges". In ACM Transactions on Multimedia Computing, Communications, and Applications, 4(4): 25, 2008.
- [6] Metcalf, C., Harboe, G., Tullio, J., Massey, N., Romano, G., Huang, E. M., and Bentley, "Examining presence and lightweight messaging in a social television experience". In ACM Transactions on Multimedia Computing, Communications, and Applications, 4(4): 27, Feb. 2008.
- [7] Boertjes, "ConnectTV: Share the experience", in Adjunct Proceedings of EuroITV, pp. 139-140, 2007.
- [8] Coppens T., Vanparijs F. and Handekyn K, "AmigoTV: A Social TV Experience Through Triple-Play Convergence", Alcatel-Lucent white paper ,2005.
- [9] Cesar, P., Bulterman, D.C.A., Jansen, J., Geerts, D., Knoche, H., and Seager, "Fragment, Tag, enrich, and send: enhancing the social sharing of videos". In ACM Transactions on Multimedia Computing, Communications, and Applications, 5(3): 19, 2009.
- [10] Nathan, M., Harrison, C., Yarosh, S., Terveen, L., Stead, L., and Amento, "CollaboraTV: making television viewing social again". In Proceeding of the international Conference on Designing interactive User Experiences for TV and Video, pp. 85-94, 2008.
- [11] Cattelan, R. G., Teixeira, C., Goularte, R., and Pimentel, M. D, "Watch-and-comment as a paradigm toward ubiquitous interactive video editing". In ACM Transactions on Multimedia Computing, Communications, and Applications, 4(4): 28, Dec. 2008.
- [12] Geerts, D., Cesar, P., and Bulterman, "The implications of program genres for the design of social television systems". In Proceeding of the international Conference on Designing interactive User Experiences For TV and Video, pp. 71-80, Dec. 2008.
- [13] Geerts, D. and De Grooff, "Supporting the social uses of television: sociability heuristics for social TV", In Proceedings of the International Conference on Human Factors in Computing Systems, pp. 595-604, Dec. 2009.
- [14] Vincent, J. and Harper, "The Social Shaping of UMTS-Preparing the 3G Customer", Report 26 for the UMTS Forum by DWRC, 2003.
- [15] Turner, N, Cairns, P & Jones, "Dispersing the Interactivity: Mobiles and Electronic Programme Guides". ACM CHI Workshop on investigating new user experience challenges in iTV.
- [16] Zhang, Yudong, Wu, Lenan, Artificial Bee Colony for Two Dimensional Protein Folding, Advances in Electrical Engineering Systems, 1(1), pp.19-23, 2012
- [17] Zhang, Yudong, Wu, Lenan, A Robust Hybrid Restarted Simulated Annealing Particle Swarm Optimization Technique, Advances in Computer Science and its Applications, 1(1), pp.5-8, 2012
- [18] Priyadharshini Muthukrishnan, Sneha Raichel Mathew, Baskaran R, Suganya V, Message Level Security Realization in Web Services Using AES and Diffie Hellman Key Exchange, Advances in Computer Science and its Applications, 1(1), pp.78-83, 2012