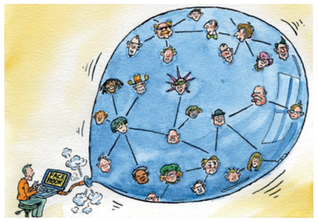

A text free mobile phone contact book with social touch!

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Abstract

In this poster we focus on finding new solutions to usability issues with contact book of a mobile phone, as it is one of the most text intensive features of a mobile phone. The poster attempts to provide a totally new look to the contact book by using visual experience and minimizing the usage of text in the interaction (hence making it usable to non literates).

Some of the new features are transformations of ideas learned from social networking websites. Immense success of social networking websites provides a great opportunity for its concepts to be applied to a mobile phone, wherever possible.

Introduction

Most of the mobile phones designed till to date are for a market where education level is quiet high. On the contrary much of the sales as predicted will come from regions where education is still not so common. For example countries like India alone have a huge population living in rural areas, 700 million as mentioned in 2001 census. The people living in such areas are either illiterate or semi literates. Also some times they are classified as 'Non-literates', to group a broader range of people, who due to different education related reasons are not able to use the mobile phone textual user interfaces.

Also considering the motivation for such a design, mobile phone manufacturers and operators are the first to benefit, also a better penetration of mobile phones also helps in the empowerment of developing countries, as it is found the impact of communication infrastructure is great towards the growth of economies of developing countries. In our day to day life, we can see our social connections as a graph (also described by the well known six degree phenomenon, which says "Every person in world can be reached in 6 hops").

We might not remember the name of a person whom we met recently, maybe introduced through a common friend. Faces and then social connection, that's how most of us remember people . It makes us wonder that our traditional contact management doesn't express this information. We rely on our brain to remember the name of persons, (face and the connection) and we most of time struggle in doing that job. If we consider the non-literate people they struggle more as they are not even able to express/search the names in their contact book either on paper or in phone.

This poster talks about methods which enables the representation of contact book in form of a graph which is easy to traverse and maintain. The aim is also to make it less dependent on text. (as then it becomes a hindrance for a non-literate user to use it effectively). The aim is to make the use of contact book easy for existing users, especially elders. As some of the research points that elders need more intuitive and easier interfaces then younger users.

Design

Assuming the huge presence of camera mobile phones, this poster's scope is valid for more than a billion devices in coming two years (which will have camera), so this solution is not targeting all the phones but almost all from near future.

A mobile phone contact book is to be taken as a graph here, contrary to approach of a tabular records in current phones. The graph can start with a root node, which must be the photo of the owner itself. To start with it wont be hard to have the first photo you take [which is your own], as a face of your mobile number. It can be observed that we have contacts in different social circles, one of the research even classifies the kind of social groups an individual keeps, supporting the above claim.

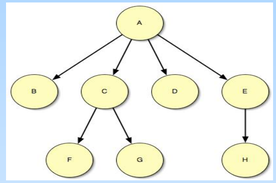

Figure 1: A probable contact book; root is the owner, other nodes depicting different contacts

Like taking an example of young engineer working in some organization. All of his contacts can be organized in different social circles, like: family contacts(including relatives), friend circles (a different circle for school attended, universities or colleges attended, organizations worked, and maybe based on resident neighborhood i.e. people in your neighborhood). See the image above and below for the visualization. (Assuming this grouping of contacts apply for most of the users) The person can choose different icons for these groups and these groups can be the first degree contact reachable from the root node, let call each such contact as a ring.

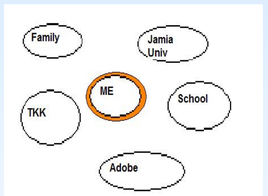

Figure 2: Image shows text labels on the groups, however we will be having images/icons instead of text. The image shows five circles in which users sees his contacts.

This first degree contact can be some one you consider primary in each of the group, for example the family group might start from users mothers contact. The number of groups in your ring can be 6-7 (more or less) depending on the number of various circles in which a person operates.

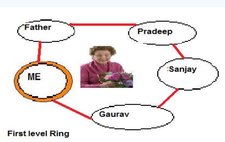

Figure 3: Here when the user chooses the family icon from the first interface, the contact book interface changes, his mother replaces the family icon and become the center contact.

Within a group there can be more people linked to your first degree contact, depending on how many of them you know directly or through that first degree contact. The structure of contact book would be more like a tree which might have 'n' number of connections from a node, (this 'n' might be empirically calculated or might depend on the user choice) also to make it a balanced tree, some software can be used to optimize the tree structure. (things like placing a frequently used contact closer/higher in the tree can also be achieved using software techniques)

New possibilities

We would like to make two recommendations here, which makes very interesting use-cases when we include them. One is Blue-tooth signature (by which we mean some identifier for a mobile blue-tooth) and second is GPS coordinates of meeting location.

a. Extremely simplified Searching

The very notion of keeping the presentation of contact book as social graph provides a major breakthrough in searching. As most of the search mechanisms provided are text based and hence a major deterrent for non literates to use such features. However it is a well known fact that visual experience is better in learning, we remember faces more than names and also the social connection most of the time.

The search leverages the social graph representation and overcomes the limitation of forgetting names, as user searches using the social graph just by looking at the photos and narrow down by moving into the right social connec tions. To illustrate this, in case of new contact book we have a ring of 6-7 contacts(the ring length is variable) which provides us a tree whose size grow by power of 7 with height. So when you search for some body , you basically narrow down by 1/7 of the search space , which is quiet good. Just to give an example for around 300 contacts , a balanced tree can give you any contact in 3 clicks!

b. Adding a contact simplified

Considering a simple use-case: a person who meets a friend's friend in university and they like to exchange contacts. This can happen with a single button press by both the parties and contacts are added.

Moreover to simplify the exchange we can take it as a notion of exchanging visiting cards, assuming the mobile interface has a special V button which picks the root node and sends it using the SMS/blue-tooth etc to the other user who has also pressed the V button in the vicinity(ignoring the security concerns here, however technology exists to perform it securely).

The problem of placing the contact information in the right group can also be solved. There have been some research in which blue-tooth information of mobile phones in vicinity has been used to identify the people in pictures taken from camera phones. A similar approach can be used to identify the common friend in vicinity when the contact exchange is taking place, and then the new contact can be added in the right place in graph next to the common contact.

c. Local social directory

When a user maintains this social graph locally it can be backed up online on some website operated by a third party/mobile operator. With this design of contact book, the software on server can extend the use of a contact book into a local trusted directory. The users of this online service may assign certain nodes to whom they allow their contact book to be visible partially or fully.

This can extend the contact book to a much wider and bigger contact portfolio, like a family clubbing contacts online and using the combined contacts on their cellphone. A mother allows her contacts to be visible to son and vice verse, so mother can talk to some of the distant relative who does not even feature in her contact book, but is present in one of the family member's contact book.

d. Blocking a spam call and other media

Apart from grouping by social groups other groupings can be created like grouping by presence information and location information. Unsolicited calls are a big problem with mobile users. To control unwanted calls, users can filter the incoming calls based on the social graph they have. He can choose from which social group people can call them, as attending a call might cause some disturbance to the callee. So users might chose to receive only urgent calls for example: only from family group.

Also security concern with multimedia content from untrusted sources is a big risk in mobile phones these days. What to accept from a bluetooth/wifi connection could be restricted to a closed trusted social group.

e. Finding the missing connection

How many times it occurs to you, that you meet somebody in a party and you want to know, how you two are connected? You go back home and do Facebook etc and try to find more. With this contact book it must be possible to know how you are connected with the guy in the vicinity by doing a search for a connection in the social graph. And the result could be shown much like this LinkedIn image on each other's mobile screens.

Figure 4. Way LinkedIn shows, how you are connected to other people.

Conclusion

People are trying to connect the scattered friends on different social networking websites and also some other means but what about the people who don't have online presence. We totally miss them!

It might occur to you that you want to talk to somebody whose contact you don't have or you don't remember her name, only thing most of the time you might remember is face or the place/link where/how you met her. With this solution we have the opportunity to transfer contact information silently, maintain it and also capture the new metadata of connections. If anticipated correctly, this design approach for mobile phone contact book can fuel the connectivity level to manifolds.

This work is based on the paper: http://users.tkk.fi/~sgaur/Paper_Mobile_Contact_Book.pdf

Inspiration:
Jan Chipchase: http://www.janchipchase.com/
NRC: http://research.nokia.com/bluesky/non-literacy-001-2005/