Elder reintegration: A trust application in participatory sensing

Alexandra Mihaita (Mocanu)[1], Ciprian Dobre[1], Florin Pop[1], Bogdan Mocanu[1]
and Valentin Cristea[1]

University Politehnica Bucharest, Roumania,
alexandra.mihaita@hpc.pub.ro, ciprian.dobre@cs.pub.ro,
florin.pop@cs.pub.ro, bogdan.mocanu@hpc.pub.ro,
valentin.cristea@cs.pub.ro

Abstract. Whether its traveling abroad or in ones own city, everyone wants to optimize its route in terms of time, distance or even sightseeing. But, finding the best path in a crowded city is very challenging in terms of continuous changing city and different user needs. Most people are busy with daily-basis activities but elders tend to walk more and, therefore, they develop expertise so why not use that to the advantage of busy people? For example, a tourist can go sightseeing in a new city by using an elders advice. But how can one trust that the elder person is up to date with current city status and that their expertise is real? This is the issue that current paper tries to address by proposing a new trust management in participatory sensing for path optimization using cloud based services.

Keywords: participatory sensing, trust management, elder reintegration, smart city

1 Introduction

In the era of Internet of Things (IoT) everybody is more in touch not only with one's devices but also with everybody, whether they are at a corner's distance or in the other part of the world. Through the Internet, people are more informed about everything: if one does not know something it looks it up on the Internet, if one wants to buy something one looks for opinions over that item. But, when having all these different opinions how to discern between the pieces of information?

Say one is traveling abroad in a foreign city with no previous knowledge about that city. Of course, one searches the web for information about that place. Today that informations means searching the web and finding a lot of best top 5 attractions, some having nothing in common with the others. This does not mean that one is right and another is wrong, it just means that people are different and as such they like different things. But when it comes to making a choice regarding which one is better, everybody looks at different things. Those different things lead to user trust in the authors opinion. But, what if instead of

general information about that city, one could find a personalized profile of the city with touristic objectives in one's proximity and taking into account persona preferences?// How can one find aggregated data about what can be done in its proximity? Asking local people might be the best idea but who has the time for that? Well, the idea proposed in this paper is that of creating a participatory sensing application for optimizing paths in terms of time, distance or sightseeing using local information. The paper discusses the ability to use tips from locals regarding sightseeing or other objectives, information that prevalently comes from elders. Why elders? An old Romanian proverb says that "everyone should be close to one's elders and if one has no elders, one should buy them" in that elders have great knowledge about the city where they have lived and can thus share that knowledge with people that might need it. on the other hand, there might be elders that do not know their city very well, so why accept recommendations from someone who has outdated information?

In order to establish who really knows the local area a trust system must be set in place that can determine the degree of knowledge of everyone who makes a statement. For example, an elder can state that taking a certain path is the best way to get to a place because he has used it in the past week, but by then maintenance service might have started which made the path unreachable. The information given by the elder is not a lie but it is stil not true. In order to address this kind of situations, a new approach for trust systems is presented in this paper. The approach presented monitors not only what a user says but its knowledge in saying that thing: how much does he really know about that and from what period in time is that information, or in other words find a way to measure what each user really knows about a situation.

Abstract pe larg descriere problema si apoi prezentare sectiuni.

2   Related work

2.1   Participatory sensing

3-4 articole Limitarile si comparatie cu proponerea noastra

The authors of [1] presented GreenGPS a fuel efficient end-to-end navigation service that is based on participatory sensing. The proposed solution showed the fact that the fuel consumption can be reduced with great impact on reducing pollution.

Trust management 3-4 articole Limitarile si comparatie cu proponerea noastra

3   Case study: Elder Reintegration

motivatia mai pe larg
sistemul propus

descriere componente sistem
utilizatori: elder si consumatori
datele: path optimized by time, distance, sightseeing
infrastructura
metoda de calcul a trust
etapele formarii sistemului (initializare, invatare, recomandare, ajustare)

4 Trust management

Formula gandita este ca in etapa de initializare sa se introduca niste categorii in seighseeeing: muzee, parcuri, interes medical, restaurante, florarii etc si in fiecare categorie sa se introduca datele publice existente pe internet.

Fiecare elder care intra in sistem trebuie sa completeze un formular in care precizeaza (optional) de cat timp locuieste in acel oras, de cate ori iese in oras pe saptamana in medie, atractiile sale si ce zone cunoaste mai bine (trustul initial al acestuia).

Pe baza atractiilor i se da apoi un set de challendge uri in care trebuie sa recunoasca sau sa plaseze pe harta cat mai multe atractii din categoria sa (de ex muzee). un alt set de challendge uri se refera la gasirea rutei optime ca timp/distanta intr o zona declarata cunoscuta. Diferenta intre ce e in sistem si cat stie elder lul constituie trustul verificat al acestuia.

Sistemul trece apoi la acceptarea de cereri din partea consumatorilor (turisti sau persoane care se grabesc).

Sistemul accepta modul urgenta in care nu se cere logarea datelor utilizator pentru categoria urgenta: spitale, statii autobuz, tranvai etc.

Altfel, este necesara completarea unui formular utilizator in care se cer informatii despre interesele utilizatorului (muzee, parcuri etc.). Si acestuia i se da un challenge privind ce i se pare interesant.

cand un consumator cere o ruta optima ca timp, distanta minima sau sightseeing, se face o recomandare. pe baza verificarii dintre pozitia sa gps si ruta recomandata se face o estimare a trustului consulatorului.

la final acesta acorda un feedback privind ruta recomandata. aceasta depinde de trustul utilizatorului pe acel drum-¿ cat a urmat calea recomandata influenteaza cat depinde parerea despre acea cale.

$$T = 15\% \ Tinitializare + 40\% \ Tverificat + 45\% \ Tfeedback$$

5 Experimental results

descriere pe larg a infrastructurii si a metodei de lucru test cases pt fazele de initializare si invatare adica ce se intampla pentru completarea init 10, 25, 50, 75 100% a datelor adica ce se intampla pentru completarea 10, 25, 50, 75 100% challengeul cum variaza trustul pentru cazurile alea si apoi cat depind fiecare? interpretare rezultate grafice

6 Conclusions

cum vi se pare pana aici?

7 References

References

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