



Review

A literature survey on older adults' use of social network services and social applications

José Coelho^{*}, Carlos Duarte*LaSIGE, Faculdade de Ciências, Universidade de Lisboa, Portugal*

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ABSTRACT

With aging, adults which once worked and were active become isolated from the world because with retirement comes a whole range of problems which span from the physical to the social scope. One of the most concerning is social isolation, which can only be fought by satisfying social needs. In terms of technology, the challenges are in designing social technologies that encourage older people to actively engage with each other and with the people around them. This paper presents a survey reviewing research surrounding the emergent field of Social Network Services (SNSs), along with other meaningful social applications, and its use by the older segment of the population. A total of thirteen domains are identified related with how these services can be improved to consider older adults characteristics: from the most important related with the family role and privacy control, to issues related with the design of the user interface, the importance of multimodal interaction and adaptive solutions to compensate age-related declines, to several other focusing on the importance of groups, photos, cultural and health information. Main contributions to the field of SNS and older adults are given in a set of recommendations which result from discussions on each domain and which aim at the design of a more inclusive SNS solution.

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^{*} Corresponding author. LaSIGE, Sala 6.3.29, Faculdade de Ciências, Universidade de Lisboa, Campo Grande, Edifício C6, 3 piso, 1749-016 Lisboa, Portugal.

E-mail address: jcoelho@di.fc.ul.pt (J. Coelho).

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1. Introduction

Population all over the world is aging (Eurostat European Commission, 2011, 2012). In 2000, the world population aged 60 years or over numbered 600 millions, triple the number reported in 1950. In 2009, the number of older persons had surpassed 700 million. By 2050, 2 billion older persons are projected to be alive, implying that their number will once again triple over a span of 40 years (United Nations, 2010). Additionally, the population of older persons is itself aging. Among those aged 60 years or over, the fastest growing population is that of the oldest-old. Today, persons aged 80 years or over account for close to 1 in every 7 older persons. By 2050, this ratio is expected to increase to nearly 1 person aged 80 or over among every 5 older persons (United Nations, 2010). With this aging process, old age dependency ratios increase (Commission, ECFIN), along with several other problems ranging from physical aspects to social limitations (Age, 2010; McLaughlin, Rogers, & Fisk, 2009). One of the most concerning issues is social isolation, which has a greater impact typically at the age of retirement, leading to drastic health degrading situations (Joinson, 2008; Shari, 2008).

The main way to fight isolation is satisfying social needs through participation in social networks. Since the beginning of this century, social networks are described as serving a great number of functions in offline life, providing social and emotional support, information resources and ties to other people (Wellman, Haase, Witte, & Hampton, 2001). This is particularly relevant at old age. As people get old, their health and well-being gets more dependent of emotionally close relationships – family members and good friends – which provide bonding social relationships and enable specific reciprocity, emotional support and companionship (Gilbert & Karahalios, 2009).

Social Network Services (SNS) are on-line environments in which people create a self-descriptive profile and then make links to other people they know on the site, creating a network of personal connections (Boyd, 2007). Participants in SNS are usually identified by their real names and often include photographs; their network of connections is displayed as an integral piece of their self-presentation (Donath & Boyd, 2004). Boyd (2007) defined three main characteristics of an SNS as allowing users to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made with others within the system. In the words of Burke, SNS are designed to connect people with friends, family and other strong ties, as well as to efficiently keep in touch with a larger set of acquaintances and new ties, without having to share the same space (Burke, Kraut, & Marlow, 2011). A growing body of evidence suggests there are many social and cognitive benefits for older adults when they use technology to create content and actively participate in reciprocal information-sharing with family and friends (Baecker, Sellen, Crosskey, Boscart, & Barbosa Neves, 2014; Cornejo, Tentori, & Favela, 2013; Garattini, Wherton, & Prendergast, 2012; Giorgi, Talamo, & Mellini, 2011; Harley, Howland, Harris, & Redlich, 2014; Judge, Neustaedter, Harrison, &

Blose, 2011; Karahasanovic et al., 2009; Lindley, 2012; Lindley, Harper, & Sellen, 2009; Neves, Franz, Munteanu, Baecker, & Ngo, 2015).

While SNS have the potential to assist older adults in maintaining relationships, uptake by older adults is extremely low (Gibson et al., 2010; Lehtinen, Näsänen, & Sarvas, 2009; Norval, Arnott, & Hanson, 2014). The reasons for this are complex, and although issues of technology access and skill are important, there are many older adults with sufficient technology access skills and ability who do not use on-line social media. Even SNS developed specifically for them have not achieved popularity with their target user group (Chen, 2009; Waycott et al., 2013). Reasons which dictate this lack of use have to be understood so that a more inclusive design can consider every user and fulfill the deep social needs present in the older segment of the population. Much of the literature overlaps, with several emerging themes such as a lack of purpose, incompatibilities, preconceptions about SNS and privacy, being suggested as important reasons as to why older adults' participation on SNS is so low.

Modern research in intelligent interactive systems can offer valuable assistance to this segment of the population, by helping them to engage more fully with the world. However, many existing user interfaces enable older people to receive and view, but not to create and share, digital content (David, Benjamin, Baecker, Gromala, & Birnholtz, 2011; Gaver et al., 2011), or often work for the “average” user but do not cater for the needs of the growing population of elderly users (Czaja & Sharit, 1998; Gregor, Newell, & Zajicek, 2002; Kurniawan, 2008; Zuckerberg, 2010). This also contributes to a low uptake of SNS and social technologies by the older segment of the population. Therefore, the challenges are in designing interactions and social technology that encourage older people to actively engage with each other and the ones around them.

This article presents an extensive study and review of the related literature surrounding the emergent field of Social Networks Services, more particularly its use by older adults. It takes into account the literature, encompassing conference and journal papers, and research projects, to build the state of the art and laying the ground for a critical analysis of this technology.

The main contributions of this work can be summarized as follows:

- Extensive study, compilation, review, and critical analysis of the available literature surrounding the field of SNS and older adults;
- Study of the most promising SNS and social applications' designed in recent years, highlighting their main characteristics;
- Identification of the most relevant domains regarding SNS and social applications concerning older adults;
- Analysis and comparison of these services and applications, and the way they address each domain;
- Compilation of the most relevant guidelines concerning the development of inclusive SNS.

The remainder of the article is organized as follows: the next

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