

# Mobile Social Computing as Assistive Technology for Improving Elderly Care

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**Abstract**—in this paper, the engineering framework for social computing systems for elderly care is being presented. The central theme is to make elderly care a family and community wide social event. The paradigm shift in the social media has driven many applications that are directed towards driving innovation in an enterprise, family care, gaming and the future businesses. This paradigm shift makes the elderly care not only a passive but active relationship of family members, community but also the technology in use. Family members can take part in the elderly care while being far away from home and bridge the emotional and social distances.

**Index Terms**—Management, Social Computing, Mobile and Pervasive Computing, Engineering, Software Design

## 1. INTRODUCTION

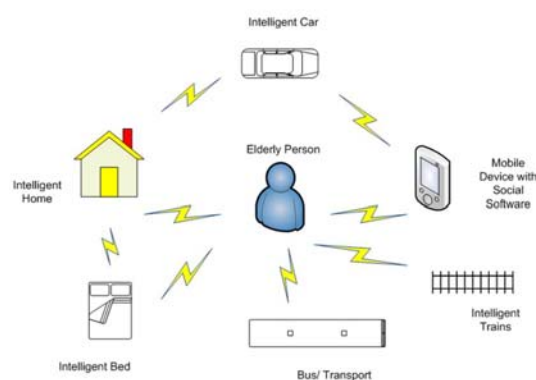
The term Elderly care not only encompasses the healthcare but also supports their daily life such as day to day activities and operational requirements, emotional requirements, connecting to love ones. Elderly care has taken importance in the recent research and development stage. Elderly care or assisted living systems are being developed to help and assist, monitor and prevent mishap for elderly specially those who are totally dependable physically on others. Social media is changing the landscape of computing and our daily lifestyle. It has changed the way we take care of our problems. The research work currently being done has its applications in business, education, art and entertainment, project management, field work and even family care [1].

Social media is playing an important role in the life of senior citizens. Today robots as well as other assistive technologies are being influenced by the social technologies [2–4].

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## 2. RELATED WORK

Integrated monitoring system for elderly care is the future of elderly care. Integrated systems for enhancement of the assistive living systems are now being developed. It describes assistance in outdoor and indoor environments which spans over three domains i.e. activity assistance and comforting services. Common diseases include hypertension, stroke, heart disease, Parkinson disease dementia, multiple Sclerosis and osteoporosis [5]. It is a short time deployable system that performs data analysis for learning. The system comprises of BAN, home care system that invokes / calls people, emergency services. The family members are in touch through call [6]. Active communication can cure depression and dementia. System that facilitates active communication [7]. One such example employs game based communication called “Nandoku”. There is increasing need for bridging technology and generation gap. It presents various statistics that suggest that elder people do not accept high end devices for their care. The main point of the paper is that medical devices ownership is necessary, elderly people use SMS and mobile camera for collaboration[8].



**Figure 1:** Mobile Social Software Integrated to Assist Elderly Care

There is a difference in the lifestyle in young and retire. Social networking has a positive effect on the psychological well being [9]. Robots are now used with social technologies. A project called MeBot addresses

elderly care by a tele-presence technology. Its domain is interpersonal communication for healthcare [10] . Persuasion research suggests effective than a reminder system for water intake. It's a game layer on the top of the real life. Drinking water is the input in the game, persuasion computing shaping the behavior. It has been implemented as multiuser forest game in the project [11] .

Win2walk [12] , a research project , is a step towards designing a social game for elderly care. It operates on mobile devices and focus on elderly social life. Elderly people with fewer rules, process of socializing with enjoyment. Assistive technologies are towards healthcare but social technologies deal with isolation. Elderly people need support to keep connected, manage connection and a system that supports reciprocal care. They like to manage and involve in memories and individual activities such as photo sharing [13] . Interaction is necessary part of life. Physical disability is not necessarily social disability [14]. The project focuses surround detecting social interaction. Difference of lifestyle in Elderly and young is one cause of social disconnctivity. Internet should be active not in passive living form. Thus behavioral and emotional and deviations are taken as system input[15].

### 3. ELERLY CARE ASSISTED LIVING TECHNOLOGIES WITH SOCIAL COMPUTING

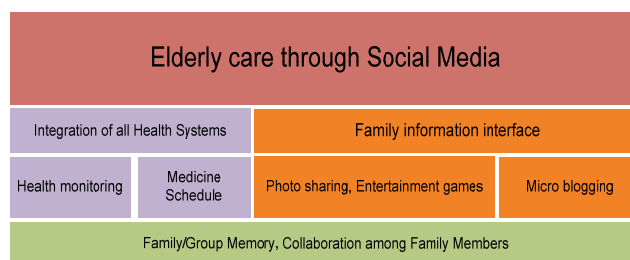
The main question arises that how social technologies get along with the present assistive technologies. To answer it, we elaborate the current technologies with much needed social computing platform and evolve taxonomy. Elderly care technologies basically addresses three issues in the elder life cycle. First physical needs, Emotional needs and Task or functional needs. Physical needs include movement, locomotion, body weight assistants, robots performing cooperative tasks and tele-robotics. Second, the emotional and mental needs are addressed by promoting sense of belongingness, encouraging the group participation, ensuring mutual care among family and friends, using games to influence elderly peoples mind to stay positive by promoting social games as major tool.

The task needs are accomplished by facilitation using geo social applications, maps , collaboration and group meetings, messaging and interfacing the social software to the context aware systems for assisted living to get real time info about love ones. The taxonomy of the overall elderly people needs is given as follows.

1. Physical Needs, its includes
  - o Locomotion
  - o Arm/ Weight lifting
  - o Robots assisted tasks

2. Emotional Needs, provided by social technologies, includes
  - o Belongingness reinforcement
  - o Fear minimization and sense of security
  - o Memories and personal attachment to family and community
3. Operational Tasks supports, provided by social technologies as well as computational technologies such as context aware systems and robots, include
  - o Life activity support such as medicines
  - o Collaboration among family using group/ family memory

The main issue with all available systems are most of them is available networking support among them , than transmitting the data to social software and trusted enough for the family members and trusted people to ensure mutual care.



**Figure 2:** Mobile and Ubiquitous Elderly care software Information System Framework

### 4. SOCIAL ACTIVITY AND ELDERLY CARE TRANSFORMATION

The paradigm shift we propose to the elderly care is to make the elderly care a social activity. By making it intra-family social activity, the social software facilitates the old and the young to ensure mutual care. The social technology facilitates mutual responsibility and helps the family members to take along families in spite of working in other cities and countries, even maintain the difference in the life style and performing better elderly care.

The wide spread internet, programmable mobile platforms and apps, richer user interface and supporting tools have made it possible to develop such applications. Social networking sites are common and the transition towards internet centric applications are factors that will improve the engineering of the next generation elderly care systems.

Any eldercare assistive technology and social networking system that works for elderly care should include the following aspects for development of their systems.

- Integration of all devices especially mobile devices to the social system.
- Family centered mutual care among social network members
- Community for supporting roles. Each community member in the social network must have some advantage of being helpful to the supporting such as physician in the family, or friend of college times for emotional support.
- Robotics and hardware interface to the social software. This will enable the dear ones to help elderly people when they are away.
- Behavior reinforcement module and micro-blogging. This can be further reinforced by sharing funny and comic or interesting in problem solving by parents / elderly people and family members.

## 5. PROS AND CONS

Implementing the mobile based social networking software for elderly care is an important milestone for this domain but certain issues must be considered .We need collaborative care, but human participation can only be facilitated using such technologies. Inter – intra family emotional link, some member might care equally but less comments or online queries must not be misinterpreted. Elderly people are source of intellect; software must ensure privacy in intra family system. Elderly people don't like technology as there is technology and age gap but user interface option must be considered to make it friendly

All systems must be integrated so that the families can take care more effectively.

## 6. CONCLUSION AND FUTURE WORK

Social computing is the future of the internet and human collaboration. Technologies must be used for enhancing family ties and elderly care. These paradigms require maturity of social networking technologies in multiple dimensions such as integration to hardware devices, context aware and intelligent system and enhanced user interface for elderly people. Social computing software in such application are quickly making new identity, other than

being a simple networking tool, it's a potential assistive technology.

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