Introduction to Senior Computer Interaction (SCI) the Branch of HCI

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Abstract— **We propose a new group of HCI (Human Computer Interaction) named: SCI people group (Senior Computer Interaction). Numerous gadgets have gotten popular across adult community, with a larger part presently claiming mobile phones, laptops and desktop computers. The concerns and demand of SCI group is different from other users. Factors of usability for the senior computer interaction users community are suggested in this paper.**

Index Terms— **Senior, Interaction Design, Senior Computer Interaction, Evaluation and Design**

I. INTRODUCTION

HCI is the vast field for humans and computer interaction. HCI surfaced in the 1980s with the advent of personal computing [1], just as machines such as the Apple Macintosh, IBM PC 5150 and Commodore 64 started turning up in homes and offices in society-changing numbers [2], [3]. HCI soon became the subject of intense academic investigation [4], [5]. The researchers investigate different fields of HCI. Following are the fields of HCI investigated by researchers: i) CCI [6] and, ii) TeenCI [7], [8]

A) CCI Community

In the field of HCI, CCI is the new addition. The Term of CCI means Child Computer Interaction. This field covers the area of using computer and computer devices by children. The age of CCI users is between 4-15 years [9], [10], [11]. The needs of this community are different from rest of the users. Emotional, educational, usability, cognitive requirements are different from other users [12], [13], [14].

B) TeenCI Community

The group of teenagers is defined from age of 12-19 years [7], [15]. TeenCI users are considered to be smart users. TeenCI users are wise, creative and try to explore new features of every device or application. HCI consider TeenCI as a separate user group [16], [17].

Interaction of senior people with computer is not recognized as a field till now. In this paper, we will introduce the new field SCI (Senior Computer Interaction) under the branch of HCI.

C) Related Work

The rate of using computer and computer devices by senior is increasing day by day [18], [19]. After the wide use of cell phone by senior, they are getting confident in using E-book reader, Laptop, Tablet computer etc [20], [18], [21]. Some of the educated and affluent senior are using various varieties of computer [22], [23].

Table I shows the usage of different devices by the seniors in America. The detail of table shows that major part of the senior community is using computer and computer devices.

Table I: Percentage of American Adults who use the different computer devices

Devices	Percentage
Cell Phone	85
Desktop computer	59
Laptop computer	52
Ipod/MP3 player	47
Game console	42
e-book reader	5
Tablet	4
None of these	9

II. SENIOR COMPUTER INTERACTION AND HCI

HCI is the subfield of computer science. It deals with the multiple fields including cognitive science, social psychology, linguistics, etc. Human computer interactions are related to human and computers interactions [4], [24], [21], so Senior computer Interaction is also a sub branch of HCI.

Table II shows the percentage of people using computer and computer devices in Pakistan. The detail shows that many of the senior community is becoming confident in using computer and its devices.

Table II: Percentage of Pakistani Adults who use the different computer devices

Devices	Percentage
Cell Phone	52
Desktop computer	34
Laptop computer	32
Ipod/MP3 player	25
Game console	2
e-book reader	2
Tablet	4
None of these	22

In HCI the major subfield researched till now are CCI and TeenCI [25], [26], [27]. The senior interaction of computer is also becoming popular now a days. So, in thus paper we are proposing SCI as another subfield of HCI.

Senior Computer Interaction (SCI) is an area of logical examination that connects the marvels encompassing among senior and computational innovations. The starting time of SCI cannot be defined but day by day the senior computer interaction is increasing.

The expansion in utilization of interaction of computer by senior has not gone unnoticed. Like never before previously, specialist co-ops are turning their consideration regarding senior as a developing business sector portion. Significantly the developers are getting worried to guarantee suitable product for seniors.

In different research papers the SCI is discussed. In past recent years, the number of researches have been done on senior computer interaction [28], [23], [29], [14], [30].
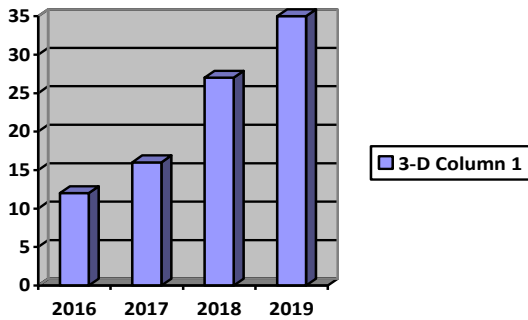

Fig. 1: Number of papers published at senior computer interaction in their content

Although the use of computer and computer devices has been discussed in past research papers but still specific group name is not suggested yet for this group.

III. CASE STUDY

The main idea of this paper is to introduce the branch of senior computer interaction. The researchers adopt the method of user testing for finding the factors of SCI branch.

A) Details of User Testing

The User Testing was done with 150 senior people to predict the behavior of senior computer interaction community. Educated, uneducated senior was selected. Seniors living in rural and urban areas were also selected. The people with physical deficiencies were also added in the research. The details related to participants are given in Table III

Table III: Details of participants taken part in User Testing

Participants	Number of Participants
Educated and living in rural area	44
Uneducated and living in rural area	36
Educated and living in Urban area	22
Uneducated and living in Urban area	32
Having physical deficiencies	16

The experiment was conducted with senior people using computer and computer gadgets. Different applications were given to users to run it after giving them tutorial. The result was recorded by the observers. Observers were experts of computer applications. Five experts observe the senior people. The detail of the experts is given below:

Table IV: Details of experts

Sr. No.	Gender	Nationality	Degree	Profession	Experience of experts
1	M	Pakistani	MSCS	QA	5
2	M	Pakistani	MSCS	QA	2
3	M	Pakistani	MSCS	Product Manager	4
4	M	Pakistani	MSCS	Application developer	3
5	M	Pakistani	MSCS	QA	5

B) Results

The observations were recorded and results for the User Testing. Observers conclude that the educated people learn more quickly than an uneducated person. The people who are living in urban areas use computer and computer devices more easily. More the age more difficult to use the computer and computer gadgets. The observers more concluded that the person with physical disability like weak eyesight declines the use of computer. The Table V shows the details of results.

Table V: Results of observations

People using computer	Percentage
Educated people uses computer	63
Uneducated people use computer	15
People living in rural area use computer	22
People living in urban area use computer	75
People with physical deficiency use computer	23

C) Senior Computer Interaction (SCI) Factors

The group of Senior has attained the age of majority and is therefore regard as independent, self-sufficient, and responsible. The SCI users affecting factors are:

- Age is a predictor to whether the older adults adapt to the computer.
- Education is linked to interest and computer use for older people.
- Physical declines, such as eyesight is also linked with computer use.
- Living in a rural or urban area may have implications on technology adoption.

IV. CONCLUSION

The aim of this research paper is to introduce the sub field of HCI. The researchers adopt different methodologies to complete this research. Literature Review technique was adopted. To get more explicit result the User Testing technique was endorsed.

The participants used computer and computer devices. Experts observe the senior participants to find the correct results. The minute details were also observed by the experts.

Recommendation

The researchers give some of the factors of usability for the senior computer interaction users community. Following are the factors given:

- Age
- Education
- Physical declines, acknowledgment
- Living in a rural or urban area

The use of computer is indirectly proportional to the age, if the age is more the computer use will be less. Education is directly proportional to the use of the computer and computer gadgets, if the education is more the use of computer will be more. High education is linked with the use of computer like teachers, bankers etc. use more computer rather than a driver, carpenter etc. The physical declines are also indirectly proportional to the use of the computer, the person with poor eyesight will not use the computer and computer devices more. The people living in urban area use more computer rather than the people living in rural areas.

Proportional Factors for Usage of Computer

The direct or indirect proportion is given for the factors effecting the usability of senior computer Interaction user community:

- Computer usage by SCI community $\propto 1/$ age
- Computer usage by SCI community $\propto$ education
- Computer usage by SCI community $\propto 1/$ physical decline

Senior Computer Interaction

In this research researchers introduce the new branch of HCI (Human Computer Interaction). In the past research papers, the Child Computer Interaction and Teen Computer Interaction was discussed. In this research the new subgroup is introduced known as Senior Computer Interaction. This branch includes the senior people those interact with computer and computer devices. The age of this group is more than 40 years. The factors that effect the usability of Senior Computer Interaction are:

- Age
- Education
- Physical declines
- Living in a rural or urban area

The researchers conclude that; the main subbranches of Human Computer Interaction are:

- CCI (Child Computer Interaction)
- TeenCI (Teen Computer Interaction)
- SCI (Senior Computer Interaction)

Future Work

The author introduces a field in HCI that is SCI. In future research could be done on different areas of SCI like cognitive factors, Heuristics evaluation. Moreover, interactive Design of application can also be changed according to the factors that affect the SCI.

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