Development of Font Independent Punjabi Typing System

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ABSTRACT— This paper presents an attempt in designing and development of Font Independent Punjabi Typing System for the Punjabi speaking people. The Punjabi Typing project is developed for improve the typing speed of computer professionals. It is platform independent application and requiring no regional language support. There is no need of Punjabi language support or Punjabi fonts. Here we include Unicode of most used Punjabi fonts like Asees, Amnollipi etc. A key listener mechanism has been used to read the key press events and also map the English characters into Punjabi characters based on their Unicode’s. So here we don’t need of any Punjabi language support because whole work done using Unicode characters.

Keywords—Punjabi Typing System, Unicode Characters

1. INTRODUCTION

Typing system is widely used throughout the world by various computing professionals to learn and adapt them to typing on keyboard. It helps in increase the typing speed and accuracy without seeing the physical keyboard constantly. The principal benefit of being able to type without looking down at keyboard is to input the text via keyboard while not having the need to think about the locations of the keys. Also when performing various tasks using keyboard shortcuts like cut-pasting it becomes unnecessary to the user to divide the attention between keyboard and the screen[1]. Many computer professionals are needed to increase their typing speed as a must for qualifying for a job. The additional benefits of having the ability to type fast without seeing at the keyboard is to be able to type more words in less time and increasing the efficiency of typing speed. Hence typing tutor are really essential tools to increase not only speed but also the accuracy and efficiency of a person.

Punjabi is an Indo-Aryan language spoken by about 130 million people mainly in West Punjab in Pakistan and East Punjab in India. There are also significant numbers of Punjabi speakers in the UK, Canada, the UAE, the USA, Saudi Arabia and Australia. Punjabi descended from the Shauraseni language of medieval northern India and became a distinct language during the 11th century [2]. Punjabi language is written in four different scripts: Gurmukhi, Devanagari, Shahmukhi and LaNDaa[3]. Typing System is extremely useful system not only for computer professionals but also for students, teachers, newspapers composers or editors and other people. This Unicode based Punjabi Typing Tutor will help to learn the Punjabi typing and increase the typing speed with accuracy. There is no such Unicode based typing tutor available in Punjabi Language for Punjabi composers to increase their typing speed. In this Unicode based Punjabi Typing Tutor, we include 11 Unicode based Punjabi keyboards.

Typing Tutors for many other languages like Arabic, Urdu, and English etc. are available. Hence there is need for Punjabi people to have a typing tutor to improve their typing speed and accuracy speed in Punjabi language.

2. SYSTEM OVERVIEW AND DESIGN

Our Project made in C# which requires no additional installation of any other regional language support[4]. Here we used a file in which Unicode characters of different Punjabi keyboards exists. So first we make this file and include Unicode characters of 11 different keyboards. And we use these Unicode characters while typing test. It is a platform independent application and so it is able to run on all operating systems. This also eliminates the requirements of regional language support. As all characters are based on Unicode representation of characters hence they are properly supported and rendered with all types of Unicode compatible fonts.

2.1 Punjabi Keyboard Mapping:

We have used different Punjabi keyboards layouts of different Punjabi typing fonts. All these layouts are authorized and here we show the keyboard layout of one Punjabi typing font “Asees” which is mostly used Punjabi typing font.
The Punjabi keyboard mapping was done using new approach and here we don’t need the install of Punjabi fonts in our system. Now we show the font conversion from English to Punjabi[5]. In the fig. 1 we show the keyboard layout of Punjabi typing font “Asees”. To perform the mapping from English to Punjabi, we have performed the key type event. When we press any key then actually we call the class of “Gurk”. In the Gurk class we have all Unicode characters of different Punjabi typing fonts and these are store in the form of two dimensional string array using the Readmap() function. When we press any key then we actually find the corresponding Punjabi Unicode character to that pressed key. For example if we press ‘A’ in Akhar Punjabi typing font then actually corresponding to that print the ‘ਅ’ character of Punjabi language. So we simply say that when key typed event is pressed on the keyboard then actually character typed is fetched and compared in the file. The simple comparison is performed to take the corresponding value of that pressed key. For example if we typed ‘A’ character then we take the ASCII value of it like ‘67’ and compare with corresponding keyboard and print ‘ਅ’ character if Punjabi keyboard is “Akhar”.

**Algorithm 2.1: Pseudo code of Keyboard Mapping algorithm from English keyboard to Punjabi Keyboard**

1. PROCEDURE textControl2_KeyDown.
2. READ event Key Typed.
3. GET Key Character Typed.
4. SET user Key to Key Character.
5. READ class of Punjabi Unicode Character Gurk and call ReadMap procedure in Gurk class.
6. IF user Key==Punjabi Unicode Character THEN
7. SET typed character to Punjabi Unicode Character.
8. ENDIF
9. RETURN typed character to event.
10. END PROCEDURE.

**2.2 Unicode Based Punjabi Character Set:**

In the “kb.txt” file where we store all the Unicode characters of different Punjabi typing fonts is stored in the two dimensional string array. Here in the first subscript include the value of ASCII value of that character and in the second subscript include the specific keyboard of specific language. All these Punjabi character of different Punjabi typing fonts are Unicode characters and we take these Unicode characters of Punjabi language from the Unicode.org and Sub-range of Punjabi character set in Unicode is from U+0A00 to U+0A7F. Danda and Double Danda contain in Devanagari and subrange of these characters is U+0964 and U+0965 respectively.
Fig 1.3: Unicode Based Punjabi Character Set

3. Design and Development:

The design of the system involved initially to add a special key class which automatically mapped the English character to Punjabi character. This ensures that whenever the key is typed then the system automatically understands it to be talk about special font of Punjabi language not English.

The system was developed using the Visual Studio 2010 using C#. So the interface of system is to be simple and easy so that users can also easily and quickly become familiar with system. But the internal development flow of system was little bit complex. Following are flow chart of the system and after that we discuss in detail the design and development of the system.

In the above flow diagram we show the flow of our system. Here first user select the language in which he wants to typing and if he select Punjabi language then corresponding to this language select the specific Punjabi typing font like select “Akhar”, “Asees” etc. User can also set the timer and after that choose the paragraph or test. Now when the test is start then timer is also start and show the result either time is over or test is finish.

4. RESULTS

The developed system is portable & having the ability to execute properly on all systems. Once the user selects the keyboard and exercise for the typing test then the main window appears like as figure 1.5

Now when user clicks on Start button then cursor automatically shown in the second text control box and timer is also start. Now here we briefly discuss about the working of system and discuss all the restrictions for typing. So following are characteristics and restrictions for the typing:

- When user is typing then side by side show the number of correct words, incorrect words, correct keys and Total keys & also show the timer. For example in the Fig 1.6 show the no. of correct words are 57, no. of incorrect words are 3, no. of correct keys are 271 and also show time is 8:22.
Fig 1.6: Screen shot during Typing Test

- All the correct words are shown in black colors and all the incorrect words are shown in red color and also underlined. For example in Fig 1.6 “ਸਿਪੁਰਲ” word is shown in black color because this typed word is correct and “ਹੁਣਾਵੇਂ” is shown in red color and also underlined because this typed word is incorrect.

- When one line is complete then automatically scroll of text control box is down. For example in Fig 1.6 when the line is complete then next line is on the top means automatically scroll is working.

- When user is typing a word then he can correct only this word, he can’t correct the previous word which is typed. Or we can say that backspace work only in word which is type. For example we want to type the line “ਤੁਹਾਡੀ ਫੀਦ ਤੇ ਅਸਾ ਪ੍ਰਫ ਇਨਸਕ੍ਰੀਪਟ ਦੇ ਆਚਰੀ ਲਈ” and we type this line up to “ਤੁਹਾਡੀ ਫੀਦ ਤੇ ਅਸਾ” and now we are typing word “ਪ੍ਰਫ ਇਨਸਕ੍ਰੀਪਟ” so we use backspace only in that word we can’t correct the words which are typed before this word.

- Here we also apply restriction on copy-paste command. User can’t use the Ctrl+c, Ctrl+x or Ctrl+v etc command. And also restriction on mouse click means if user clicks on mouse and try to copy the content then message is shown like “Mouse click is not allowed”. In the following figure we show it.

- After that report will be generated. Following is the figure of report.

Fig 1.7: Report of Typing Test

- We also print the report on click the print button.

5. Conclusion and Future Scope

In the proposed system, we have developed the Unicode based Typing System of Punjabi and Languages. In this system, first thing is that all work based on Unicode character and second thing is that we use the different keyboard layouts of Punjabi language. So here we developed a system in which user give the typing test in Punjabi language and further different keyboard layouts of both languages are provided. In Punjabi language, user perform the typing in “ਅਕਾਦ”, “ਅਮਰਿਟਬਲੀ”, “ਅਮਰਿਲੀਪੀ”, ”ਆਨਮੋਲਲੀਪੀ”, ”ਆਸੇਸ”, ”ਡੀਚਾਤਰਿਕ ਵੀਬ”, ”ਗੁਰਮੁਖਲੀਪੀ020”, ”ਇਨਸਕ੍ਰੀਪਟ ਕੀਬੋਰਡ”, ”ਜ਼ੌ”, ”ਪ੍ਰਾਇਮ-ਜਾ” and ”ਪੰਜਾਬੀ” Punjabi typing fonts. Number of correct and incorrect words and timer is shown on same screen while user is performing the typing test. So this makes aware the user regarding the time. User also sees the test report of typing and here we include the typing test in test report which is given by user. We also take the print of test report and we can save the test report in our system. So in the end we say that we developed a typing system which is based on Unicode Characters, include different typing fonts of Punjabi language and give the test report of typing test.

In the future, this developed system is used to take the typing test of Punjabi language. At present time, in all typing system include only one font of specific language and user give the typing test in that specific font of that specific language. But in our system, user gives the typing test in different Typing fonts of Punjabi language. Second thing is that all typing fonts of Punjabi language are based on Unicode means there is no need to install the Punjabi typing fonts on the system.
REFERENCES