[**Back to HCI Lab Home Page**](http://iitg.vlab.co.in/?sub=72&brch=170)

**Mobile Key Pad Design - Size , Layout and Bevilling**

The layout of  a mobile keypad is very important when performing tasks like sending SMS or using a PDA phone. Basic numeric keypad in conjunction with T9 is efficient for typing SMS text messages but for sending emails you may need to look for a cell-phone with a QWERTY keypad with keys properly spaced and large enough to operate with both thumbs.

Some keypads may look good but are very difficult to use. Tiny keys look cool but may be an ergonomic nightmare. The best keypads have sufficient spacing between keys and pressing the keypad gives a positive haptic feedback. Some keys are very close to each other with a raised portion in the middle which is called bevilling. This allows your finger to feel each key which is required for properly using the keys.

In this  experiment  we  will  only study numeric keypad interaction design  issue.

**Observe the mobile keypads shown below**

|  |  |  |  |
| --- | --- | --- | --- |
| http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/key1.jpg | http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/key2.jpg | http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/key3.jpg | http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/key4.jpg |

Do you observe any pattern? The location and sequence of keys are same in all layouts irrespective of their look and feel. Why is this pattern so popular? Is this a standard pattern? What would happen if we rearrange the keys into different positions?

**Look at these numeric keypads used in industrial products**

|  |  |  |  |
| --- | --- | --- | --- |
| http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/nkey1.jpg | nk5 | http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/nkey3.jpg | http://iitg.vlab.co.in/userfiles/7/image/uelabs/mobile%20keypad/nkey4.jpg |

Did you notice that the sequence of rows is reversed with 7, 8 and 9 now at the top? Is this keypad as easy to use as the other one staring with 1, 2 and 3 at the top? What would be your answer? Find out by conducting this experiment.

The layout of a numeric keypad plays a vital role while inputting information. The ease of use, retention in memory, physical stress and error probability are some factors governing this layout.

This experiment will expose you to four different types of layouts. You will be interacting with each of them and finding the speed of entering a mobile number. At  the  end  of  the  experiment  you  can  infer  on  the  best  possible keypad layout configuration  that  facilitates  error-free entry without  having to  sacrifice ease of use.

 To proceed  further  click on the **OBJECTIVE** tab on the top or to exit this experiment  click on **HOME**  on the top.

[**Back to HCI Lab Home Page**](http://iitg.vlab.co.in/?sub=72&brch=170)

**After performing this experiment**

1.     You will understand interaction efficiency of various numeric keypad layouts.

2.     You can compare different keypad designs based on the  results obtained  and  graphs.

3.     You can inspect the effect of entering different mobile numbers using same layout.

**Note:**

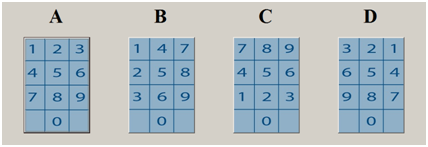
Mobile users normally do not dial but store numbers in contact-list / phone-book.This experiment finds out the usability problems for novice, illiterate and elderly users, who rarely use  phonebook to select numbers to dial.

 To proceed  further  click on the **PROCEDURE** tab on the top or to exit this experiment  click on **HOME**  on the top.

# [Back to HCI Lab Home Page](http://iitg.vlab.co.in/?sub=72&brch=170)

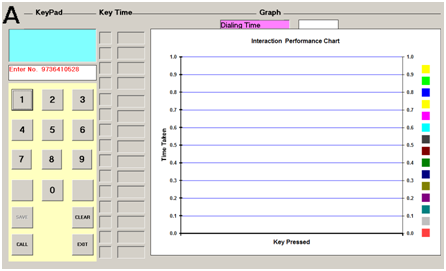
Read and understand all the steps in the procedure given below before you start this experiment.

* You  will  see  a  Start Simulation  hyperlink  in  the  SIMULATOR  tab  which  follows  this  tab.
* After  you  click on the Start Simulation link  a  dialog  will  appear  asking  you  to  download  “keypad\_4.0.exe” application.
* Download “keypad\_4.0.exe”   at appropriate location you wish and then open or execute the application.
* Keyboard layout testing program initial window will appear showing four keypad layouts as below.



1.     Select any one keypad layout by clicking on the layout itself.

2.     A new window will open showing  keypad , key time  and graph area.



3.     To  go  back  to previous  screen  press  EXIT  button on the  keypad  itself.

4.     The number which you dial on keypad will appear in blue display box on top of  keypad.

5.     SAVE key is non functional and is used for symmetry purpose only.

6.     Begin dialing a 10 digit mobile number by clicking on the keys of the keypad. You  need  to press **CALL key**  at end  after  dialing 10 digits.

7.     Pressing **CALL key**  at  end  will  freeze  the  keypad  and  further  dialing  in prohibited.

8.     The timer starts when any numeric key is clicked and keeps track of 10 digits dialed. Key press time will be displayed in the area next to it. The timer stops only after clicking **CALL key** at the end. So do not forget to  press CALL key at the end.

9.    Use **CLEAR key** to undo the last digit dialled while dialing a number. The timer and graph keeps recording the errors too.

10.  Use print-screen at the end and save the experiment data as an image in a word file for future reference and analysis.

11.   **EXIT key** should be used to go back to previous screen for selecting another keypad layout.

 To proceed  further  click on the **SIMULATOR** tab on the top or to exit this experiment  click on **HOME**  on the top.

# [Back to HCI Lab Home Page](http://iitg.vlab.co.in/?sub=72&brch=170)

    1.  This experiment uses VB6.0 executable application under Windows 32 bit OS. Install Visual Basic 6.0 on your

        PC **OR** download required VB control to **"C:/Windows/System32"** by clicking on the link below …

[Download  VB Control](http://125.20.82.167/uelabs/downloads/MSCHRT20.OCX)

2.  After  you  click on the **Start Simulation** link below a  dialog  will  appear  asking  you  to  download

   executable ( exe ) application.

3.     Download “keypad\_4.0.exe”   at appropriate location you wish and then open or execute the application.

4.     Now click on the link below...

[Start Simulation](http://125.20.82.167/uelabs/exp6/Keypad_4.0.exe)

 To proceed  further  click on the **QUIZ** tab on the top or to exit this experiment  click on **HOME**  on the top.

# [Back to HCI Lab Home Page](http://iitg.vlab.co.in/?sub=72&brch=170)

1.     Which keypad layout (A/B/C/D) took least time for dialing a number? Why?

2.     Which keypad layout (A/B/C/D) took maximum time for dialing a number? Why?

3.     Which keypad layout is more prone to errors?

4.     By how much will the time to dial increase/decrease if the size of buttons is doubled in the layout?

5.     Will the time to dial increase/decrease if the font-size of label on the buttons is increased?

6.     Use laptop touchpad to interact instead of mouse and compare the results?

 To proceed  further  click on the **ASSIGNMENT** tab on the top or to exit this experiment  click on **HOME**  on the top.

# [Back to HCI Lab Home Page](http://iitg.vlab.co.in/?sub=72&brch=170)

1.   Make a list of 10 random mobile numbers and dial them in succession using same keypad layout. Find out how many numbers you could enter without errors and with errors and time to dial each. Find the reasons for errors. Try to relate this with the sequence of digits in the mobile number.

2.   Do the entire experiment using laptop touchpad instead of mouse and compare it with the results obtained earlier using mouse. Can you draw any inferences?  Is touchpad better than mouse while using a virtual keypad?

 To proceed  further  click on the **REFERENCE** tab on the top or to exit this experiment  click on **HOME**  on the top.

# [Back to HCI Lab Home Page](http://iitg.vlab.co.in/?sub=72&brch=170)

Refer to these books and links for additional knowledge

|  |  |
| --- | --- |
| p2 | p3 |

**URLs**

http://www.yuiblog.com/blog/2007/10/02/challenges-of-interface-design-for-mobile-devices/

http://en.wikipedia.org/wiki/Telephone\_keypad

http://arxiv.org/ftp/arxiv/papers/1007/1007.3633.pdf

http://www.mobiface.com/

   To give feedback  for this experiment click on the **FEEDBACK** tab on the top or to exit this experiment click on **HOME**  on the top.