NoClick Users Manual

NoClick is a utility, tested on linux Fedora 30/32 and Windows 10, that enables the user to left/right/double click and drag with the mouse, without doing any physical mouse clicks – only mouse movements are required.

In this document, references are denoted as, [N], and are listed in §7.

Some other programs, designed to circumvent physical mouse clicks, are noted:

1. GNOME has the system, Hover Click [1]. The control box is stationary, so to switch between the different mouse event types, requires moving back and forth between your work area and the control box.
2. GentleMouse [2] runs on older Windows systems, apparently not Windows 10, and not Linux. The NoClick design is similar to Gentle Mouse, where a *trigger window* appears when the mouse is stationary, and the user then hovers over the set of options in the trigger window, to effect a mouse event. Many more features are also built into Gentle Mouse.
3. ClicklessMouse [3] is a C# program that runs on all versions of Windows, of similar design to GentleMouse and NoClick.

We hope that NoClick will be found useful for the basic functionality that it provides.

The source code is released under the MIT license, and uses the packages listed in §6, notably the Open Source Edition of QT [4], which is under an LGPL license.

Table of Contents

1 Setup

The README.md file [5], part of the NoClick distribution, explains how to install the NoClick executable. The command line invocation is:

```
Usage: NoClick [options]

Options:
  -h, --help      Displays this help.
  -v, --version   Displays version information.
  -s              Log to screen
  -i              Read/write settings file.
                  Write ini file name to screen, exit
  -d              Debug/verbose messages
```

The many NoClick customizations may be controlled by editing the settings file. Most of the settings can also be set via the GUI interface, §4. With the **-i** option, the full path to the settings file is written to the screen, and then NoClick exits. Copy the HTML file

dev/src/noclick/noclick/NoClick.html

to be next to the settings file i.e. in the same folder as the settings file.

NoClick writes messages and logging to a log file. The log file is also next to the **.ini** settings file, but with a .**log** extension. With the **-s** option, the logging output is sent to the screen, instead.

1.1 Linux

On Fedora 32, NoClick seems to be incompatible with the default flavour of GNOME. Fortunately, the *Classic* and *Xorg* flavours work fine, and are accessible via the Fedora login screen.

Users of NoClick need to be members of the *input* group, in order to determine which device file corresponds to the keyboard. The hard-coded path “/proc/bus/input/devices” is assumed in dev/src/noclick/noclick/NoClickUtils.cpp .

On linux, NoClick can be set to run in the background with the command:

```
NoClick&
```

1.2 Windows

On Windows, the background version of NoClick is built using the command

```
make SUBSYSTEM_WINDOWS=1 bins
```

in the *dev/src/noclick/noclick* folder.

2 Introduction

NoCllick offers two different arrangements for the four click panes. The 2x2 square arrangement is assumed throughout this document, except for §5, where a linear arrangement of the click panes is discussed.

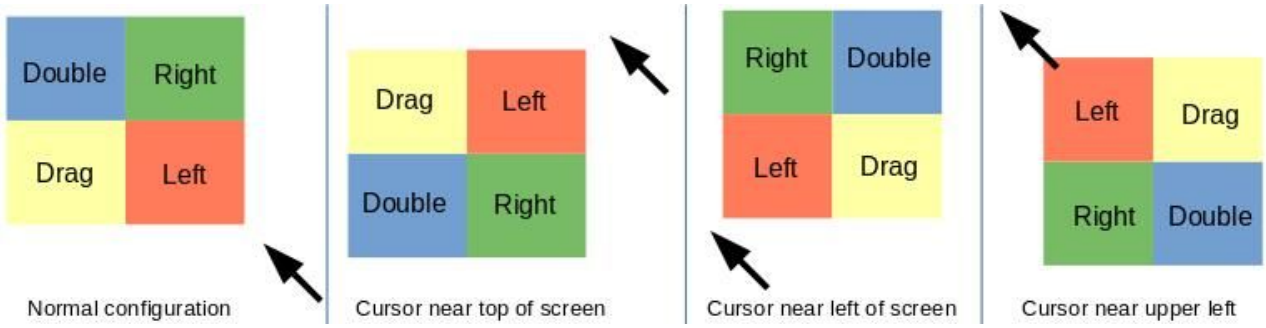

Figure 1: The four configurations of the 2x2 click panes

The NoClick *click panes* appear after the mouse comes to rest. Normally, the panes appear to the upper left of the mouse cursor, except when the mouse is near the left side of the screen or the top of the screen. The 4 different cases are shown in Figure 1.

The colours and transparency of the click panes may be specified by the user. When using the program, the individual panes are not labelled. Of course, one can memorize the colours. Another method is to notice that the cursor is always closest to the Left Click pane. The Drag pane is horizontal to the Left Click pane. The Right Click pane is vertical to the Left Click pane, and the Double Click pane is diagonal to the Left Click pane.

2.1 Procedure

When the mouse comes to a stop, a small box appears momentarily. If the user moves the mouse towards the small box, the click panes will appear. Otherwise, the click panes will not appear. A motion towards the small box is also a motion toward where the click panes will appear. We call this small box, the *star* (the original intended shape).

The NoClick system contains many settings that the user may edit. For example

- How long the mouse must be stationary for the star to appear.
- What it means to move towards the star.
- How long the star stays visible if the mouse does not move.
- How long the click panes stay visible.
- How long the mouse has to be stationary in a click pane to activate the click pane.

All these settings, and more, may be edited by the user to customize the program.

The actions of Left click, Right click and Double click are straightforward. However, a Drag action requires some explanation. There are two types of Drag: A 1-stage Drag and a 2-stage Drag. They are both initiated by the Drag pane. The setting Drag/type = 1 or 2 determines which Drag type is invoked by the Drag pane.

2.1.1 1-Stage Drag

The 1-Stage Drag is initiated by coming to rest in the Drag pane. At this point the user may drag to anywhere on the screen. The drag event ends when the mouse has stopped

long enough (specified by a setting). The drag event may also be ended by hitting any of Shift, Ctrl, Alt . Please note, that, after initiating a Drag event, if the user does not start dragging soon enough, the Drag will be over before it starts :-). The Drag may be cancelled at any time by hitting the ESC key. In this case, everything snaps back to where they were at the start of the Drag.

2.1.2 2-Stage Drag

The 2-stage drag is initiated by coming to rest in the Drag pane; this is the first stage of the 2-Stage Drag. This first stage can last indefinitely, even if the mouse is stationary. There are three ways to leave the first stage of the Drag:

- Hit ESC, and this cancels the Drag, as in the 1-Stage Drag.
- Hit either Shift, Crl or Alt, and the Drag is ended, as in the 1-Stage Drag.
- Come to rest in any of the click panes, and this begins the 2nd stage of the 2-Stage Drag.

The 2nd stage is identical to a 1-Stage Drag.

3 GUI

The main window of the NoClick GUI is shown in Figure 3. A left click on any of the 4 click panes or the star, will bring up a colour picker. All of the click panes have the same opacity. The opacity of the panes, and the opacity of the star may be set in the two fields.

There is a radio box for setting the kind of drag that is initiated by the Drag pane. Furthermore, the stage of the drag that is currently active is indicated by the highlighting of the corresponding row of the Drag Type radio box.

At the upper right of the main window is the Show/Hide toggle button. When labelled, “Show”, as in the figure, the click panes and star will not appear. This may be convenient in certain situations. In normal operation, the Show/Hide button is labelled, “Hide”. To the right of “Show” or “Hide” is the hot key, which is another way to toggle the Show/Hide button.

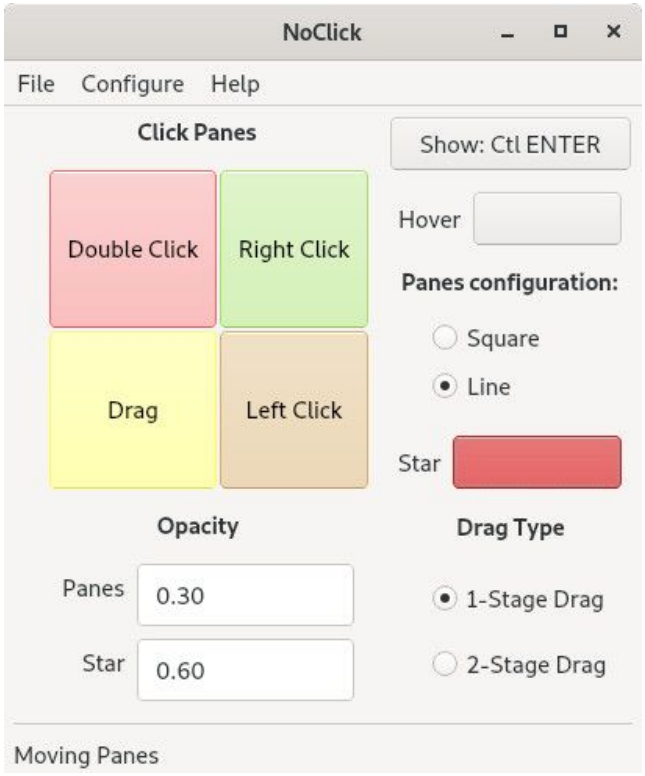

Figure 2: Main Window

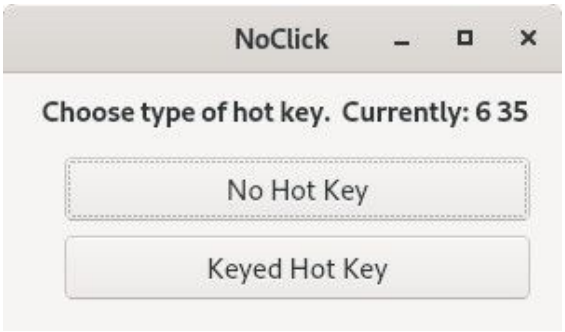

Figure 3: Hot Key Window

The hot key is set by right-clicking on the Show/Hide button, which brings up the Hot Key Window (Figure 3). To have no hot key, hit the “No Hot Key” button. To specify a hot key, hit the “Keyed Hot Key” button, and then press the hot key that you would like, on your keyboard. A hot key consists of any modifier combination of Shift, Ctl, Alt along with a non-modifier key. A hot key can have no modifiers, but it must have a non-modifier key. The two “Currently” numbers in Figure 3 are explained in §4.1.

When the Hover toggle button is highlighted, the Show button may be toggled to Hide, by hovering over the Show button. This allows toggling from Show to Hide without doing a physical click. Hovering is always disabled when the button reads, “Hide”, as hovering would interfere with NoClick mouse management.

3.1 Status bar

The bottom of the main window is a status bar, showing the state that the system is in e.g. *Moving Panes:* the mouse is moving and the Click Panes are visible.

3.2 Menu Bar

The top of the main window is a menu bar. The **File** menu has only an “Exit” option. The **Help** menu has two option:

- Settings-- This brings up a description of the various settings that can be used to customize NoClick.
- About – This brings up a window with the version of NoClick, and the full path to the settings file. The settings file may be edited to customize NoClick. However, the settings file should be edited only when NoClick is shut down, since NoClick writes into the settings file when the NoClick system is shutting down. Please note that many of the settings may be edited from the GUI, §4.

The **Configure** menu brings up forms and colour pickers for editing many settings, which are the parameters by which NoClick may be configured. Any edit that is done through the Configure menu, takes effect immediately, and is saved to disk when shutting down NoClick. The settings are discussed in §4.

4 Settings

QT maintains a settings file for NoClick. The location of the settings file may be determined from the Help/About popup window. All these settings may be edited in the settings file, but only when NoClick is shut down, as NoClick writes to the settings file during the shutdown process.

Alternatively, most of the NoClick settings may be edited through the NoClick GUI. These edits have immediate effect, and are written to the settings file during the shutdown process. In this section, the settings are addressed, according to where the settings may be edited in the GUI:

1. **Main window**. There are various settings that are accessible through the main window.
2. **Timings**. These settings have the units of milliseconds [ms], and may be edited via the Configure/Timings window.
3. **Panes**. These settings may be edited via the Configure/Panes window.
4. **Settings File**. A handful of settings are accessible only through the settings file, and hence may only be edited when NoClick is shut down.

The next four sections discuss the settings along the above decomposition. Each section has a table, listing the settings, where each setting is located in the GUI and in the settings file, along with a brief description of the setting. Following the table, is any further information about the listed settings.

The units in the settings file are:

- Opacity: Real number between 0 and 1 (0 = completely transparent)
- Colour: Hexadecimal integer of the form #RRGGBB.
- Time: Milliseconds [ms]
- Angle: Degrees [deg]
- Distance on the screen: Pixels [pix]
- Panes/type: *SquarePanesType* | *LinePanesType* (Section 5 describes the linear panes type)
- Boolean: *true* | *false*

4.1 Main window

Table 1: Settings via Main Window

Settings Name	**Function**	**GUI Access**
Section [Panes]		
dClickColor	Double Click pane colour	Left click on Double Click pane
rightClickColor	Right Click pane colour	Left click on Right Click pane
dragColor	Drag pane colour	Left click on Drag pane
leftClickColor	Left Click pane colour	Left click on Left Click pane
opacity	Opacity of all the panes	Opacity/Panes text box
type	Arrangement of the 4 panes	Radio box, “Panes Configuration”
Section/setting		
Star/color	Colour of the star	Left click on star button
Star/opacity	Opacity of the star	Opacity/Star text box
Label/allowHover	Enable hover Show->Hide, §3	Check/uncheck the Hover button
HotKey/key	Toggle the Show/Hide button	Right click Show/Hide button, §3
HotKey/modifiers		
Drag/type	1-Stage or 2-Stage drag	“Drag Type” radio box

Drag

The normal drag is a 1-stage drag, which ends when you hold the mouse stationary long enough (Configure/Timings/DragStopDelay). A 2-stage drag has the advantage that you

can leave the drag stationary, indefinitely (say, get a cup of coffee), and return to continue the drag.

Hot Key

The values 1,2 and 4, used by NoClick for the modifiers Shift, Ctl, and Alt, are the same across all platforms. However, NoClick uses the native key codes for the non-modifier keys, and these codes are platform-dependent. Similarly, the hot key label inside the Show/Hide button may have different names for the same key e.g. KP3 (Linux) and NUMPAD3 (Windows).

The hot key interface, obtained by right-clicking on the Show/Hide button, displays the information *Currently: Mask KeyCode* . If Mask is -1, there is no hot key. Otherwise, Mask is an integer from 0-7, being the sum of the modifier values defined, above. The KeyCode is the native key code. In the settings file, the two HotKey settings are

HotKey/modifiers = Mask and *HotKey/key = KeyCode*

4.2 Timings

Table 2: Settings in menu Configure/Timings

Settings Name	**Function**	**GUI Access**
Periods for Sampling		
Mouse/timeInterval_ms	Update stationary/moving flags.	Position
Action/timeInterval_ms	Change in state?	Action
Label/timeInterval_ms	Stationary over Show/Hide?	Hover
Durations		
Star/stationaryTimeCutoff_ms	How long the star stays visible	Star stationary hide
Star/stationaryTimeAppear_ms	How long till the star appears	Star stationary appear
Panes/movingTimeCutoff_ms	How long till the panes disappear	Apparatus moving hide
Mouse/stationaryThreshold_ms	Defines mouse stationary	Mouse stationary
Drag/stopDelay_ms	Delay to end a 1-Stage drag	Drag stop delay
Drag/stopDelay2_ms	Delay to end 2nd stage of drag	Drag stop delay2

If only the 2-Stage drag is of interest, and you do not want to bother with the 2nd stage, you can put *"Drag stop delay2" = 0* , which has the effect of immediately ending the 2nd stage of the drag.

4.3 Panes

Table 3: Settings in Configure/Panes

Settings Name	Function	GUI Access
Section [Panes]		
hotPointOffset_pix	Distance of Click Panes to hot point.	In the Click Panes grouping
sideLength_pix	Side length of each click pane	
lineOffset_pix	Stagger of the panes at either end	In Linear Click Panes grouping. When *borderWidth < 0*, the frames are assigned borderColor. This corresponds to the Border Color checkbox being checked.
borderWidth_pix	The border is part of the pane	
borderColor	Color of the border, if used.	
borderOpacity	Opacity of the border	
Section [Star]		
hotPointOffset_pix	Distance of Star to Hot Point	In the Star group.
sideLength_pix	Side length of Star	
axisAngle_deg	Half-angle of the cone (see below)	

When the mouse stops moving and the Star appears, there is a time interval of length “Star stationary hide” during which the Star stays visible. During this time, the initial motion of the mouse determines whether the Click Panes become visible. For this to happen, the initial motion of the mouse must be “towards” the Star.

In reference to Figure 4, the initial motion of the mouse must be within the cone of <h3> stopDelay_ms [integer] </h3>

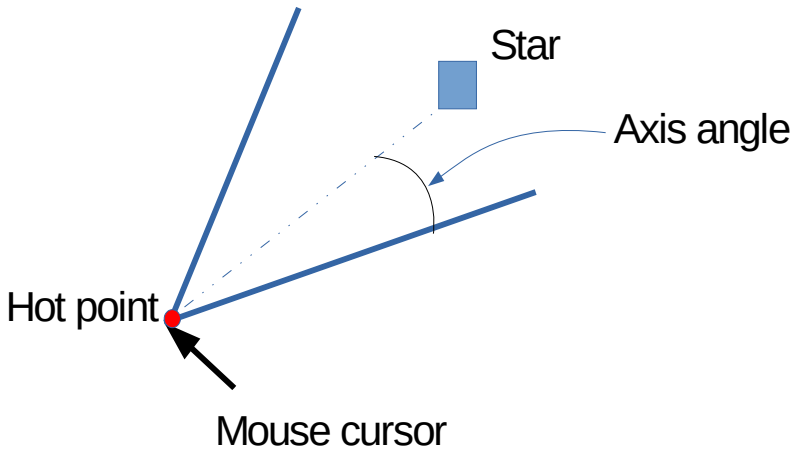

Figure 4: Cone of motion at the hot point

The cone of motion is defined by the two thickened rays emanating from the Hot Point. The full angle at the vertex is 2 * AxisAngle .

During a drag, this is how long the mouse can be statinary for, before the drag is ended.

motion, whose size is determined by the Star axis angle setting.

4.4 Settings File

The settings in this section are usually left as is, except when debugging.

Settings Name	**Function**
Drag/stageColor	Highlights the active row of Drag Type radio box in Main Window
Section [System]	
lowestLoggingLevel	[int] – The log file will contain messages of at least this severity
WriteIniFileNameToScreen	[boolThe settings are similar to Panes. The ones that are different are listed, here.] – Write settings file name to screen on startup
Section [HotCursor]	
semi_width_pix	The hot cursor is centred around the location that the Click Panes are referring to. It is generally not used (*show = false*), as it adds clutter and may interfere with mouse work. However, it is a useful debugging tool. The hot cursor is a cross formed by a horizontal and vertical line. The inside points of the 4 arms are set back from the centre by *inset_pix* pixels, thus the visible length of each arm is *semi_width_pix – inset_pix*.
inset_pix	
color	
show [bool]	

5 Linearly Arranged Click Panes

NoClick has the option of arranging the click panes in a linear fashion, as indicated in the Panes Configuration radio box of Figure 3. Aside from this geometrical arrangement, the other distinctions from the square (2x2) arrangement are:

- The star is not used – when the mouse becomes stationary, the click panes appear directly. This may be desirable for certain types of mouse work.
- The click panes have transparent interiors, and borders of configurable width.
- The borders are the usual colours, or a specified single configurable colour for all pane borders.

Figure 5 shows the 4 different arrangements of the linear click panes.

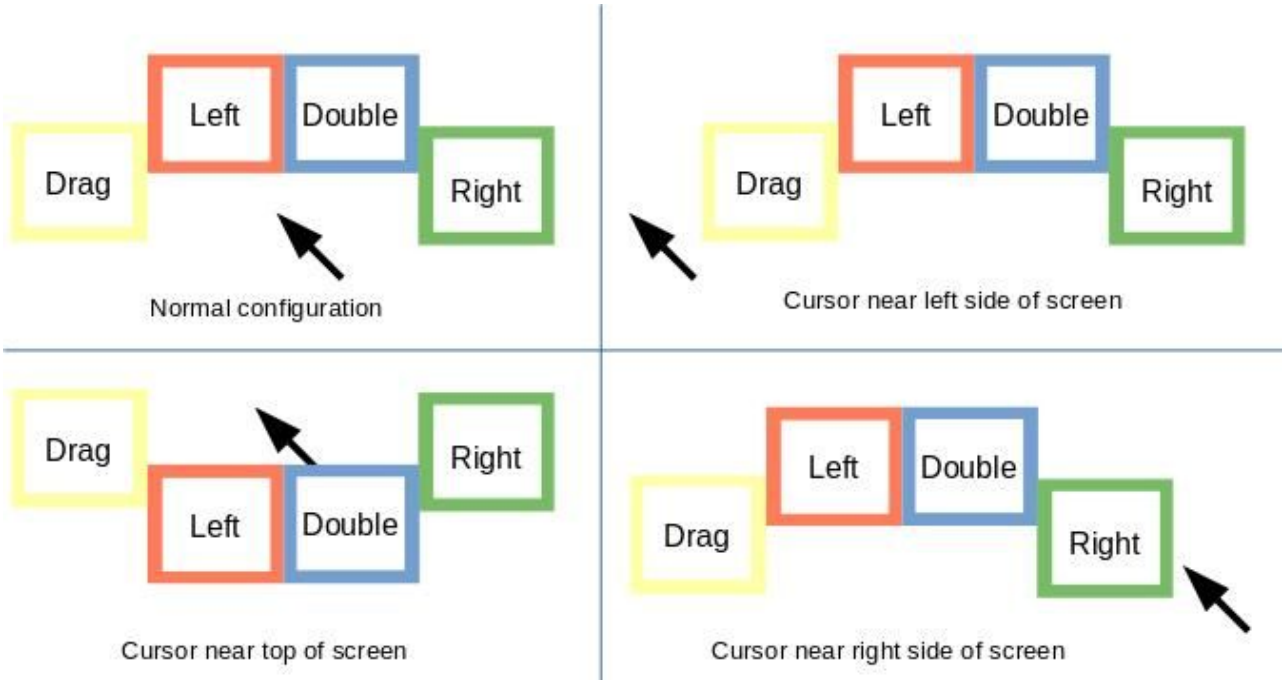

Figure 5: The four configurations of the linear click panes

We note, that regardless of the configuration of the linear click panes, the left-to-right order is always Drag, Left, Double, Right.

6 Acknowledgements

Here is a list of packages to support developing and building NoClick on Linux and Windows 10. The linux packages were available via the system installer.

- QT Open Source Edition
  https://www.qt.io/download-open-source
  Windows, settings, logging, timers, html

- Clang/LLVM
  https://releases.llvm.org/download.html
  C++ parser library to create IO source code for enums and bare structs/classes.

- Boost
  https://sourceforge.net/projects/boost/files/boost-binaries
  filesystem, thread, bimap

6.1 Linux only

- Atspi Assistive Technology Service Provider Interface
  https://www.freedesktop.org/wiki/Accessibility/AT-SPI2/
  Routines for directly accessing the mouse – movements and clicks

6.2 Windows only

- VS Visual Studio
  https://visualstudio.microsoft.com/downloads/
  VS was accessed solely through the x64 native command window.

- MSYS2
  https://www.msys2.org/
  bash, make, gcc and utilities to support Makefile usage
  gcc was used to parse preprocessor macros from C++ code. For general compilation, the native cl.exe, from VS, was used.

7 References

[1] GNOME Hover Click, https://help.gnome.org/users/gnome-help/stable/a11y-dwellclick.html.en
[2] Gentle Mouse, http://www.gentlemouse.com/default.aspx
[3] ClicklessMouse, https://github.com/ProperCode/clickless-mouse
[4] QT, https://www.qt.io/
[5] README.md, part of the NoClick distribution