

# MouseTrap User Manual

Mousetrap is a standalone GNOME application that allows users with physical impairments to move a mouse cursor. It uses a webcam to track the motion of any object visible by the camera and moves the mouse cursor according to the path of the tracked object (a user's head, for example). Distributed with software that allows accessible mouse clicking, MouseTrap will give most physically impaired users access to the full functionality of a mouse. Our ultimate goal is to have a usable, stable solution that allows users to control their cursors just as well as someone using a mouse.

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Figure 1 explains the basic functionality of MouseTrap:

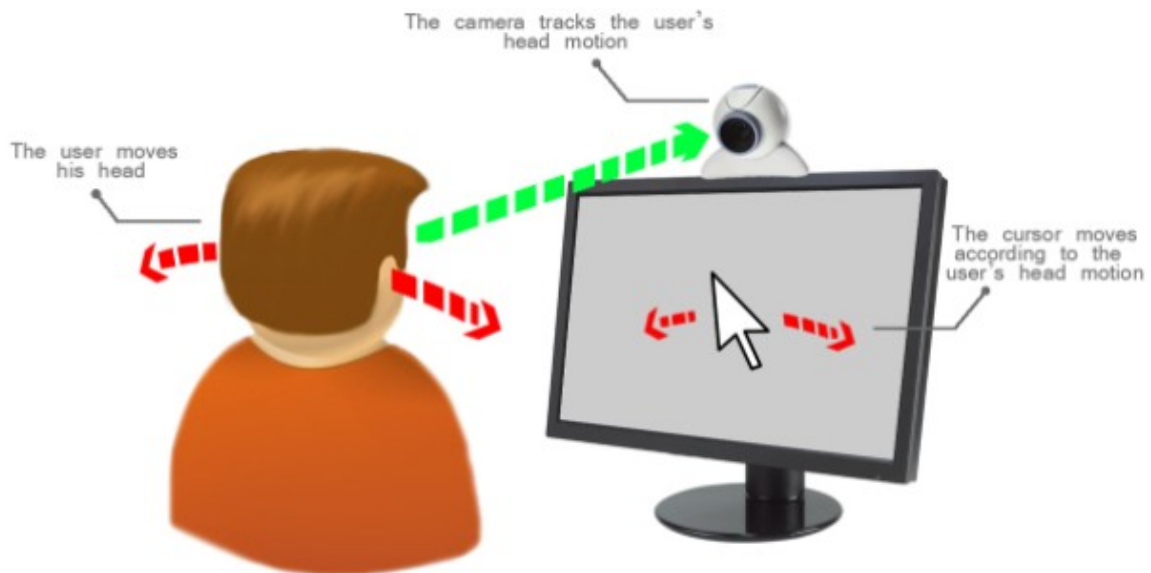


Figure 1: MouseTrap functionality

# Installation

## MouseTrap Requirements

Here is a list of some dependencies required by MouseTrap:

Package	Required Version	Description
gtk2	≥ 2.12	The GTK+ Toolkit
pygtk	≥ 2.8.4	GTK+ Python bindings
python	≥ 2.6	Python platform
opencv	≥ 0.9.9	Open Computer Vision Library
pyorbit	≥ 2.14.0	Python bindings for ORBit2
python-xlib	≥ 0.13	Python Xlib library
python-pyspi	≥ 0.6	Python AT-SPI bindings
doxygen	≥ 1.5	A documentation system for C++, C, Java, IDL and PHP (this package is required for building the documentation)

**Note:** These are the most common dependencies that are required by MouseTrap; depending on your operating system the user could need more or less than these presented in the list.

## Getting the Code

Please follow this link for basic instructions on how to access the terminal and how to use it:  
<https://help.ubuntu.com/community/UsingTheTerminal>

The code can be obtained by cloning the git repository:

```
$ git clone git://git.gnome.org/mousetrap
```

## Installation

```
$ cd mousetrap/
```

```
$ ./autogen.sh
```

```
$ make
```

And as root:

```
# make install
```

It is possible to modify the installation path using - prefix=/non/standard/path.

## **Configuration**

To configure MouseTrap, you need to execute the program and it will create the configuration file automatically.

```
$ mouseTrap
```

## **Camera**

A web camera is needed for running MouseTrap. Please note that not all web cameras are recognized by MouseTrap. In general, the camera must be able to be detected in the Linux operating system before it can work with MouseTrap, but this is not always the case.

# Running MouseTrap

To run MouseTrap the user has to open a terminal window, navigate to the folder where the software was installed and type in the command `./mousetrap`.

After running MouseTrap, the software will take a few moments to analyze the images that are coming from the camera in order to find a tracking point (ideally the user's head). This process is visible in the script mapper and is denoted by the message "Found a matching point".

## User Interface

The MouseTrap user interface is very simple and consists of the basic functions that the user needs in order to move a mouse cursor without a mouse.

Please note that MouseTrap does not have a click function yet, meaning that the user can only move the cursor by the movement of his/her head but can not make it click. To enable the accessibility function for mouse clicking built in the Linux Operating system please follow these steps:

1. Go to **System->Assistive Technology** menu.
2. Click the **Mouse Accessibility** option.
3. Enable the "**Initiate click when stopping pointer movement**" option

See Figure 2 for a visual aid:

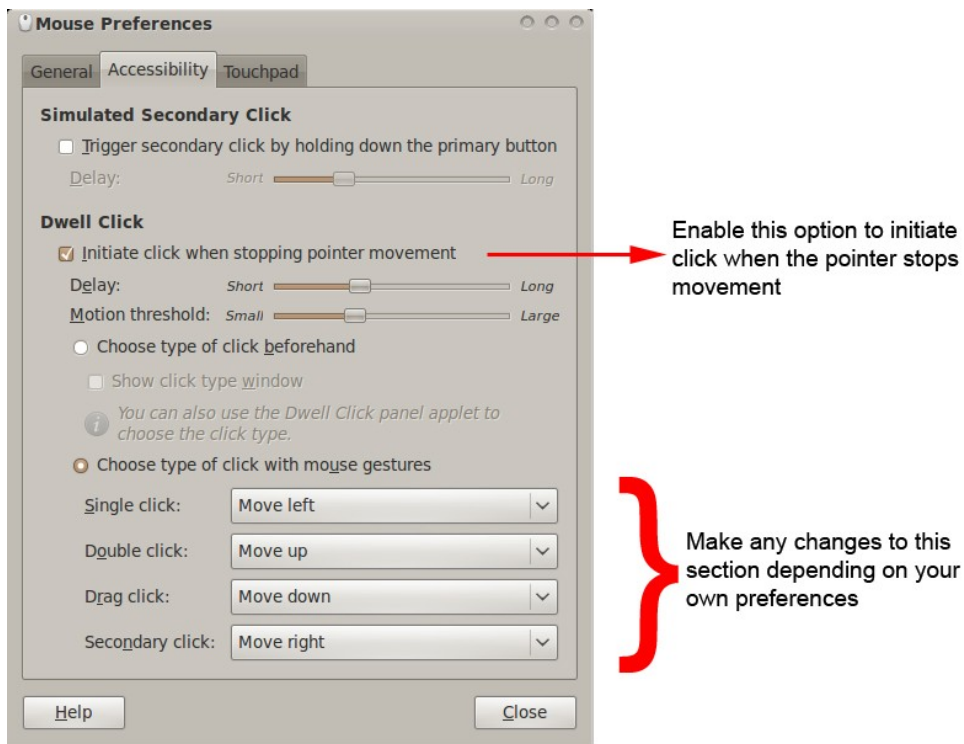


Figure 2: The Mouse Preferences menu

To learn more about this, please visit the Ubuntu Accessibility web page:  
<https://help.ubuntu.com/community/Accessibility>

Figure 3 shows the main interface of MouseTrap:

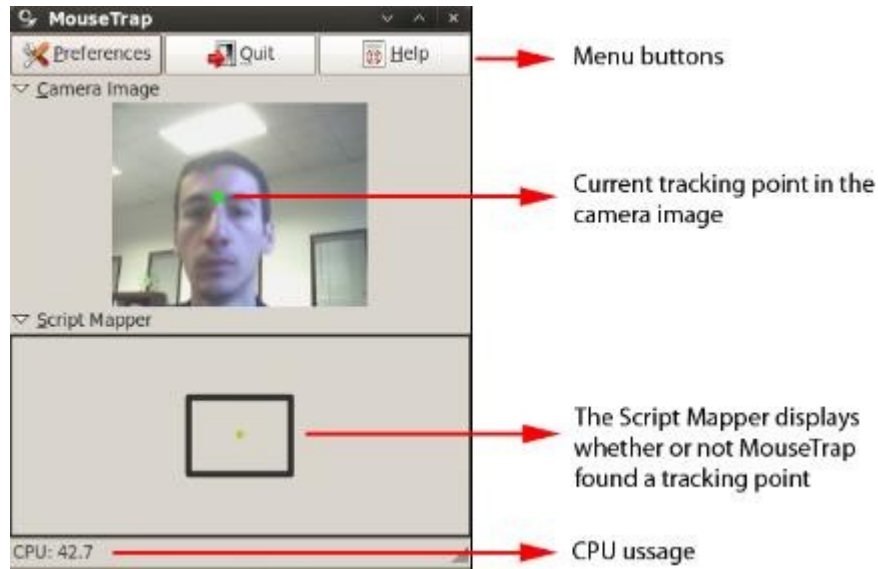


Figure 3: MouseTrap interface

As visible in the image, MouseTrap looks for the person's head and marks the image with a green dot (see the Camera Image in Figure 3). The movement of the user's head will determine the movement of the green dot, hence moving the mouse cursor.

From the main interface the user has access to some of the features built in MouseTrap. To access them click on the Preferences button. Figure 4 shows the Preferences menu:

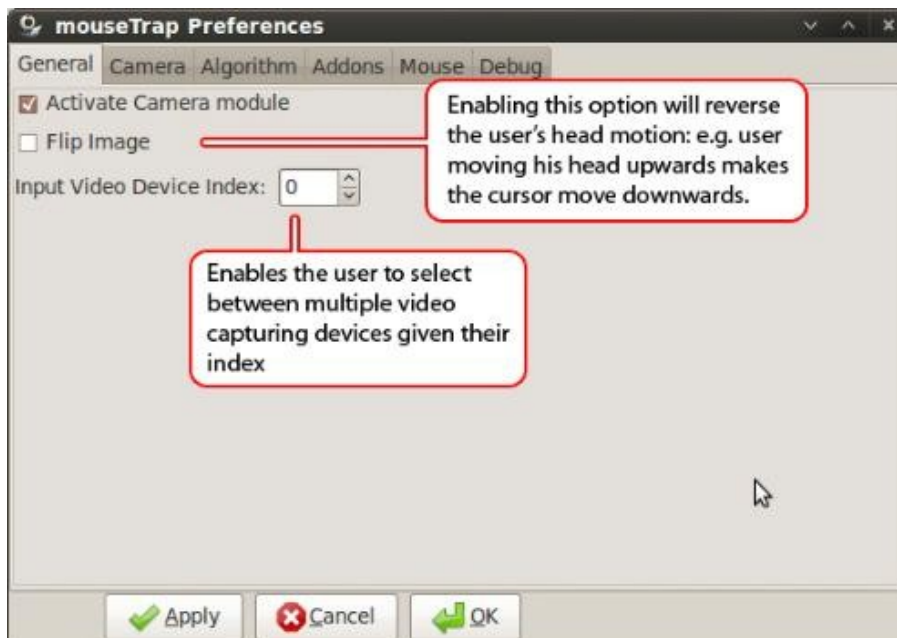


Figure 4: The Preferences menu, General tab

Through the Preferences menu, the user has access to 6 tabs: General, Camera, Algorithm, Addons, Mouse, Debug.

Figure 5 represents the Camera tab:

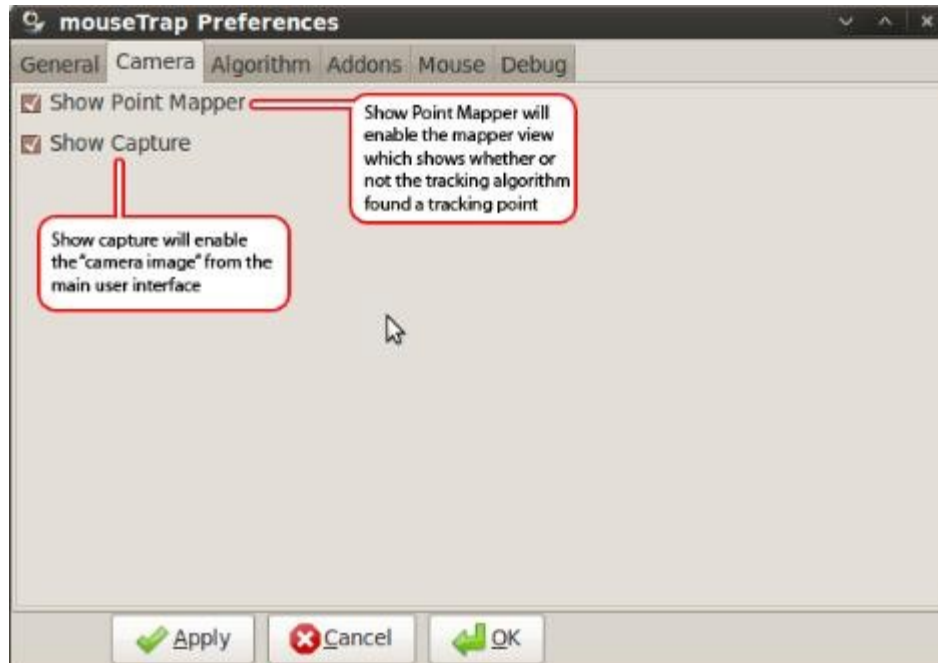


Figure 5: The Camera tab

## Settings

The default settings of MouseTrap are generally all the user needs in order to interact with the cursor. It is also a good idea to double-check that some of the features are enabled. For example, Camera Image and Script Mapper are very important to the user when using MouseTrap; therefore, to enable them the user would have to go to the Preferences menu and make sure that "Show Point Mapper" and "Show Capture" are enabled. At the same time, it is important to make use of the "Input Video Device Index"; if the camera does not get detected by MouseTrap, then it could be that the user has multiple video capturing devices plugged in the computer and switching between them is done by changing the "input Video Device Index".