# SETTINGS GUIDE

## Version 2.2

## Issue 2

# Nouse – Settings Guide

## Version 2.2

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# Preface

## *Purpose*

Nouse or "nose as a mouse" is a technology that enables users to control the computer mouse pointing device hands-free using only a webcam as an input device and the movement of the user's nose. The unique, patented technology uses advanced video recognition algorithms to map the movement of the user's nose to the movement of a computer mouse device thereby allowing a user to operate a computer hands-free. This Settings Guide will navigate the user through the customization of the Nouse settings so that they suit the user's unique setup needs.

## *Getting Started*

Before getting started, the user must first install Nouse application. The Quick Start document is designed to assist the user in installing and getting the application running quickly. In addition, the user must review the Nouse User Guide which provides an overview of the basic features of the application.

This Settings Guide assumes that the user has a basic knowledge and understanding of Windows applications, Web browsers and concepts such as double-clicking, menu bars, and dialog boxes.

## *Graphics*

The appearance of graphics found in this document may vary according to the site configuration and operating system used.

## *Related Documentation*

The user should first use the Nouse Quick Start Guide in conjunction with Nouse User Guide before reviewing this Settings Guide.

# Chapter 1 – Configuring Nouse Settings

This chapter provides a detailed description of Nouse settings that can be configured by the user. Nouse application contains many settings and configurations that are modifiable by the user. These settings are broken down into basic and advanced settings, where the basic settings are options that most users will be expected to modify at some point, while the advanced settings will likely only be used by advanced users of Nouse. It is important to note that Nouse application is installed with a default configuration so that the user does not need to change any settings at the beginning. The default settings are set to values that will be acceptable to most users. It is recommended that the user modify the default setting only after becoming comfortable with using Nouse.

To access the settings for Nouse application, simply click on the "Settings" button on the main Nouse interface (see section 3.4 of the User Guide) or by selecting the "Settings" menu option on Nouse submenu (see section 3.3 of the User Guide). This will launch Nouse Settings program which displays Nouse settings window for the user (see Figure 1.1).
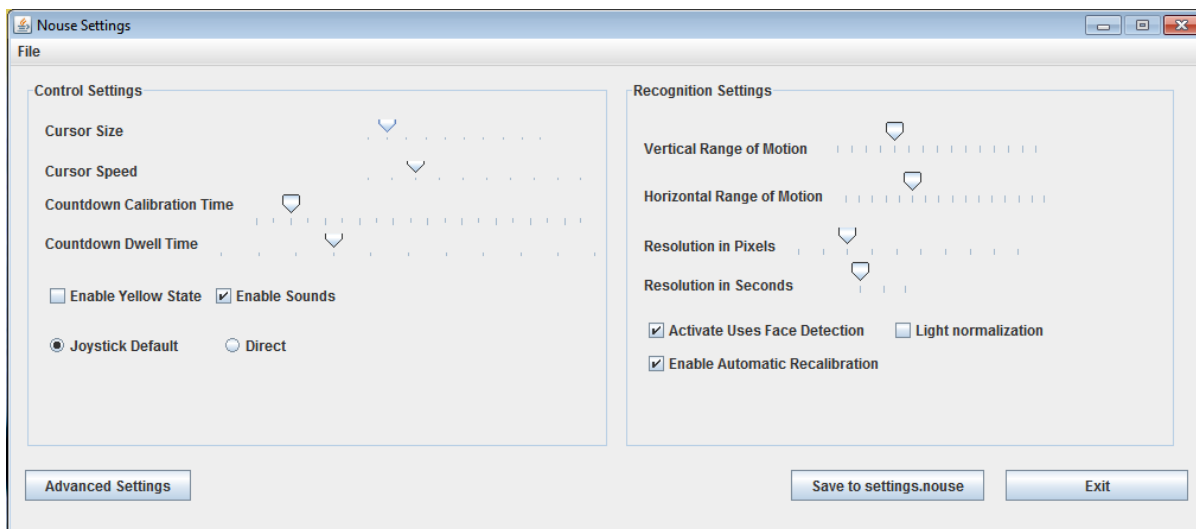


Figure 1.1: Nouse Settings Program

## 1.1 User Files

When launching Nouse Settings program for the first time, it will load the "settings.nouse" file, which contains the default settings for Nouse. Any time a user makes a change to the settings in this program and clicks on "Save to settings.nouse", the "settings.nouse" file will be updated to the new settings. Nouse reads from this file in order to determine what options to use.

Nouse application allows the user to create custom setting files. A user can create a new settings file by selecting the new settings and then clicking on the "File" menu at the top left hand corner then "Save

as..." submenu. The user must then choose a new user name, such as "James". This will cause Nouse Settings program to create a new file called "James.nouse". When a new settings file is saved it becomes the default settings file loaded when Nouse application runs. In the above example the "James.nouse" settings file would become the setting file loaded by default (see figure 1.2).
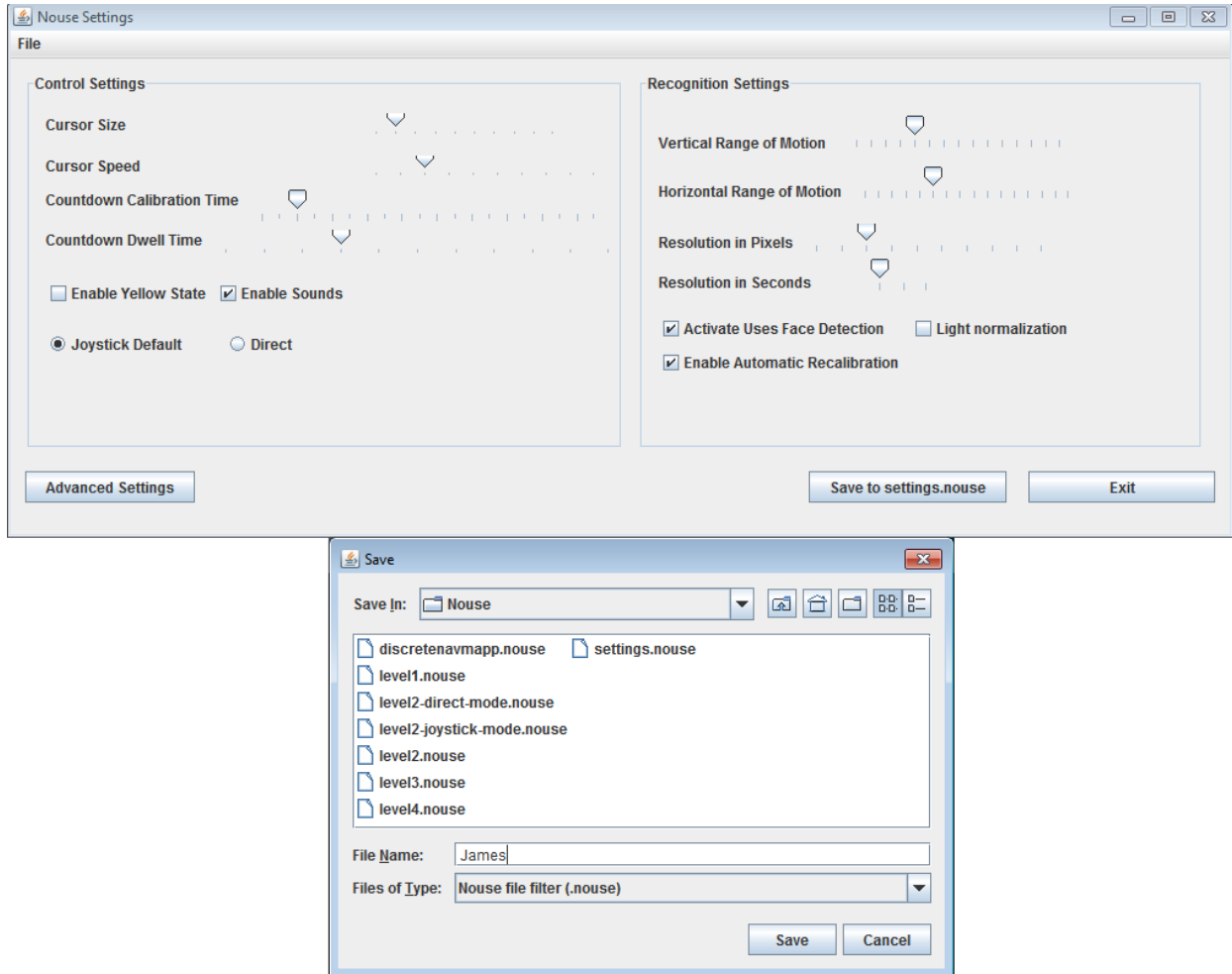


Figure 1.2 – Saving a custom settings file

To change which settings file will be used by Nouse, the user can simply click on "File->Load" and select the desired settings file. When the user selects a different settings file to load, Nouse application automatically sets the loaded settings file to the default file.

At any time a user can change the settings of a "James.nouse" (defined by the user) file back to the original or default values by clicking on "File->Load default values into "James.nouse". Doing this will replace the "James.nouse" file with default values and load these default values into Nouse Settings program.

## 1.2 Basic Settings

The following section provides a detailed description of the basic settings for Nouse application.

### 1.2.1 Cursor Size

This option controls the size of NouseCursor. It can range in values between 1 and 10 with 1 being very small and 10 being very large. The default value is 2.

### 1.2.2 Cursor Speed

This option is only applicable to the joystick navigation mode (see section 3.2.1 of the User Guide). It controls the speed at which NouseCursor moves with values ranging from 1-10, with 1 being very slow and 10 being very fast. The default value is 3.

### 1.2.3 Countdown Calibration Time

This option controls the amount of time in seconds Nouse application will count down while in calibration mode (see section 2.5). This countdown can range in length from 1 to 20 seconds. The default is 3. The user does not need to modify this option.

### 1.2.4 Countdown Dwell Time

The basic way to click or type using NouseCursor or NouseBoard is to navigate to the location and to stop NouseCursor movement. When Nouse application detects that the user is still it will commence a countdown. When NouseCursor is still the application assumes the user would like to move into "Nouse Click Mode" (see section 3.3 of the User Guide). When the countdown reaches 0 the application moves into click mode. The length of time for the countdown is called the Countdown Dwell Time. This countdown can be modified by the user. The range is values from 0 to 10 seconds. The default is 3.

This value can be set lower once the user becomes comfortable using Nouse. This will allow them to perform the click actions quicker.

Setting the value to 0 will disable the countdown. This value can be set if the user chooses another method for clicking such as mouth click or voice commands.

### 1.2.5 Enable Sounds

This option allows the user to turn sound effects off or on. The default value is enabled/on or a check in the box.

### 1.2.6 Enable Yellow State

For some users, it may be difficult to move NouseCursor to a precise point on the screen using either the "direct" or "joystick" mode as the primary navigation mode. In these cases, Nouse application provides another mode of navigation that can be used in conjunction with the primary navigation called "Yellow" state (named is an analogy to a traffic light's interim state between green and red).

When the "Enable Yellow State" option is enabled the user continues to utilize one of the primary navigation modes but once the user is in the general area where they would like to click (i.e., they do not need to be on the exact spot they would like to click on), they allow the click countdown to reach zero as before. Once the countdown reaches zero however, instead of moving to "Click Mode" NouseCursor moves into the "Yellow State" mode indicated by a yellow stripe along the bottom (see Figure 1.3).
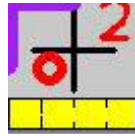


Figure 1.3: NouseCursor in Yellow State

In the yellow state the user continues to navigate NouseCursor however the cursor moves in much small amounts across the screen. By restricting the movement of NouseCursor the user is better able to navigate to a more precise point on the screen. To move NouseCursor in "Yellow State" the user simply moves their nose away from NouseCursor crosshair in the direction they would like to move and then back to the crosshair until NouseCursor is at the desired location.

Just like in a primary navigation mode such as "Joystick" or "Direct", when the user becomes still in yellow state, a second countdown begins. When the countdown reaches 0, Nouse changes to the clicking mode (see section 3.3 of the User Guide).

The default value is to have the "Yellow State" disabled or no check in the box. Users who have difficulty navigating NouseCursor to a precise point on the screen should active this option.

### 1.2.7 Primary Navigation Type

Nouse provides two options for navigation: Joystick and Direct.

Both the Joystick and Direct navigation modes are described in detail in section 3.2 of the User Guide. The default is Joystick mode.

In order to change from Direct to Joystick or from Joystick to Direct, the user will need to make the change in the settings program and restart Nouse application.

### 1.2.8 Vertical and Horizontal Range of Motion

These options allow the user to determine how sensitive NouseCursor will be to the vertical and horizontal movement of the user's nose. For both options the default setting is 5 however both range from 1 to 15. For the average user the default setting of 5 should be adequate.

Users with low mobility can set the value lower. This means NouseCursor is more sensitive to the nose movements of the users (i.e., NouseCursor will move from one side of the screen to the other with a smaller range of nose movement).

Users with high mobility can set the value higher. This means NouseCursor is less sensitive to the movements of the nose by the users (i.e. To move NouseCursor from one side of the screen to the other requires a larger range of nose movement).

The range of motion selected is visualized in NouseCursor as the image in NouseCursor presents the entire range that is available to the user. If both ranges are set to be very high, the image in NouseCursor will be zoomed out from the nose and if the ranges are very low, the image will be zoomed in by a large amount.

### 1.2.9 Resolution in Pixels

The resolution in pixels option is related to how Nouse application decides if the nose is still or if it is moving. Since it is very difficult for a user to be perfectly still, Nouse application uses relative positioning to determine NouseCursor movement (i.e., if the user is relatively still it can interpret this as being still to activate the click mode). It is reflected in the size of the red circle around the nose in NouseCursor. Its value can range from 1 to 10. The default value is 3.

Depending on the tracking conditions (lighting, skin colour, head tremors, etc.) a different value for this option may be optimal. For example, if the user has a slight tremor, increasing the number allows Nouse to interpret a wider range movement as staying still in order to activate the click mode.

### 1.2.10 Resolution in Seconds

This option works in conjunction with Resolution in Pixels option. Although the Resolution in Pixels option deals with the relative location of the nose in determining movement, this option deals with how much time to wait before determining if a movement has occurred. The possible values range from 1 to 3 with the value of 1 as default.

### 1.2.11 Activate Uses Face Detection

When Nouse application starts there is a calibration step described in section 2.5 where the application looks for the user's face. When this option is active or checked, the application will indefinitely look for the user's face until it is found. The default setting for this option is active or checked and this should not be changed by the user for best results.

However, there may be a situation where the camera conditions are so bad that Nouse is unable to detect a face. This does not mean though that Nouse will not be able to track a nose once it is presented. If the "Activate Uses Face Detection" option is <u>not</u> selected, Nouse will automatically skip face detection step and assume the user's face is in the center of the camera's field of view. It will start the calibration process directly with learning the nose.

### 1.2.12 Light Normalization

When using Nouse, it is important to be in an environment with "good" lighting. In this context, good lighting means that the face (and especially nose) is clearly visible and not over or under exposed. If there is an unavoidable problem with the lighting, it is possible to improve the situation by activating Light Normalization. This in effect decreases the bright values of an image, increases the dark values and adjusts everything in between to remain consistent. This option is disabled or unchecked by default and should only be activated when lighting cannot be improved.

## 1.2.13 Enable Automatic Recalibration

This option can be used to turn on or off Nouse's automatic recalibration functionality described in section 3.4.4 of the User Guide. By default this option is enabled and the user does not need to recalibrate manually.

## 1.3 Advanced Settings - Control Settings Tab

The advanced settings will likely only be used by experienced Nouse users. To view the advanced Nouse settings, simply click on the "Advanced Settings" button from the main settings dialog (figure 1.1). This will launch the Advanced Settings window for the user. This window contains three tabs, Control Settings, Visual Settings and Board Settings that are visible along the top. Each of these tabs has a group of settings that can be modified by the user. By default the Control Settings tab is displayed first (see figure 1.3). To move to another tab the user can simply click on the tab name.
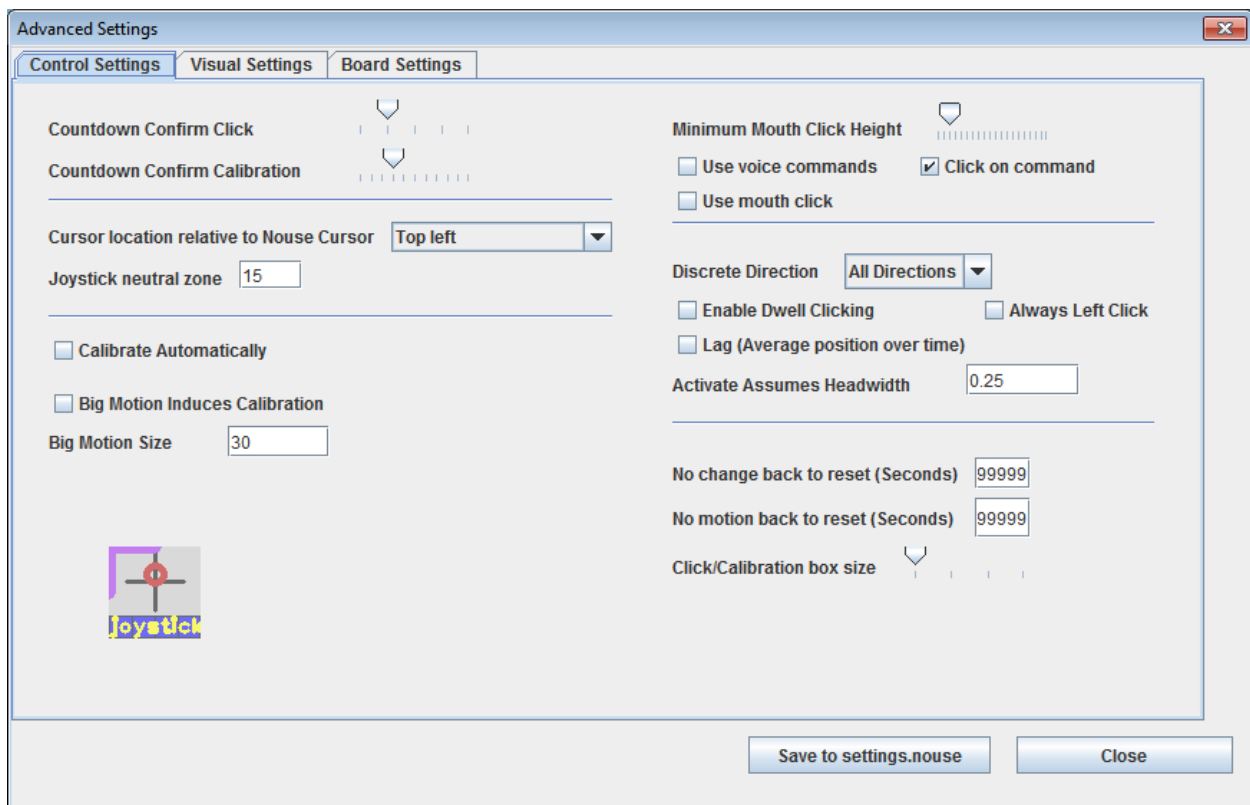


Figure 1.3: Advanced Nouse Settings: Control Settings Tab

## 1.3.1 Control Settings

This section describes the options found on the "Control Settings" tab.

### 1.3.1.1 Countdown Confirm Click
This option is similar to the "Countdown Dwell time" (see section 1.2.4) however the "Countdown Confirm Click" is used to count down when Nouse is in "Nouse Click Mode" (see section 3.3 of the User Guide). This countdown is used to allow the user to select the click option. The user must select the click

option (i.e., left, right, up or down) before the countdown reaches zero. If the countdown reaches zero and no click is made then Nouse goes back to navigation mode. The range is values from 1 to 5. The default for this option is 2.

### 1.3.1.2 Countdown Confirm Calibration

This option controls the amount of time in seconds Nouse application will count down while in calibration mode (see section 2.5).The value ranges from 1 to 10. The default for this option is 3.

### 1.3.1.3 Cursor Location Relative to NouseCursor

Nouse application allows the user to modify the location and behaviour of the purple pointing component (see section 3.1 of the User Guide) of NouseCursor. Since NouseCursor is a bigger icon than the traditional mouse pointing icon, the user may have difficulty navigating and clicking on positions along the outside edges of the screen. This option allows the user to select where the actual click point will be within NouseCursor. There are three options (by default this option is set to top left):

1. Top left (default option): The purple pointing component stays at the top left corner of NouseCursor and as such the click point is in the top left location of NouseCursor (see Figure 1.4a).  The user can still select items near the bottom or far right of the screen, but part of Nouse Cursor will not be visible.



Figure 1.4a – NouseCursor set to Top Left

2. Moves:  This option means the purple pointing component moves depending on where NouseCursor is on the computer screen. It is designed to allow the user to point on any location on the screen. For this option the cursor remains on the top left of NouseCursor for the majority of the time. However, if NouseCursor is moved to touch the right side of the screen then the purple pointing component (and click point) will move to the right of NouseCursor. This will allow the user to select items very close to the right hand side of the screen. In addition, if NouseCursor is moved to touch the bottom of the screen then the purple pointing component (and click point) will move to the bottom of NouseCursor. This will allow the user to select items very close to the bottom of the screen.

   Once NouseCursor is moved away from the right hand side or bottom of the screen, then the purple pointing component will move back to the top left of NouseCursor (see Figure 1.4b).



Figure 1.4 b – NouseCursor set to Moves – Figure one is NouseCursor on the right hand side of the screen and the second figure is NouseCursor at the bottom of the screen

3. Always Center: This option means there is no purple pointing component but the click point is located in the center of NouseCursor (see Figure 1.4c). This option is only recommended if a translucent cursor is being used as well (see section 1.3.2 Translucent Cursor).



Figure 1.4c – NouseCursor set to Center

### 1.3.1.4 Joystick Neutral Zone

In order to stop NouseCursor from moving at a desired location on the screen, the user needs to move the red circle to the center of the crosshairs. The Neutral Zone option is related to how Nouse application decides if the user's nose is at the center of the crosshair. Since it is very difficult for a user put the red circle in the exact center, Nouse application uses relative percentage positioning to determine if the red circle is in the middle (i.e., if the user moves the red circle close to the center of the crosshair it can interpret this as being at the center and stop NouseCursor from moving). This option uses a percentage from 1 - 100. The default value is 15%.

For users that have difficulty bringing their nose directly to the center, it may be useful to make this value higher than the default 15% so that it will be easier for them to stop NouseCursor. Conversely, advanced Nouse users may wish to make this value lower in order to allow more of their motion range to be used for moving NouseCursor around.

**NOTE:** This option is only applicable if the user has set the navigation to "Joystick" mode.

### 1.3.1.5 Calibrate Automatically

When Nouse application is started, the application goes through a step of learning and confirming where the user's nose is located (see section 2.5). This option allows the user to skip this step. As such, instead of presenting a countdown to the user and allowing the user to put their nose in the center crosshair, Nouse application will assume that the nose is in the crosshair as soon as calibration begins and thus jump directly into NouseCursor navigation mode. By default the option is disabled/off and the user needs to go through the manual calibration described in section 2.5.

Users can set this option to automatic if they experience difficulty setting the calibration manually (e.g., the lighting prevents Nouse application from easily finding the user's nose).

### 1.3.1.6 Big Motion Induces Calibration

This option allows the user to perform a Calibration without the need to go through the application menus. This can be done by having the user perform a "Big Motion" while navigating NouseCursor or from within NouseBoard. By default this option disabled.

### 1.3.1.7 Big Motion Size

If the "Big Motion Induces Calibration" is enabled then Nouse application allows the user to set a parameter for capturing what is a "big motion" action by the user (i.e., this option controls how much motion is considered big enough).

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The way Nouse calculates a motion is by determining what percentage of the image from the webcam has recently changed. If a user makes a sudden "big" motion, this percentage will become quite high. The user can control this percentage in order to determine a high enough value that would be considered a "big motion" and as such activate the Calibration function automatically.

By default this option is set at 30% and will only be used if "Big Motion Induces Calibration" is enabled.

### 1.3.1.8 Use Voice Commands

Nouse application can utilize Voice commands to perform certain mouse actions such as clicks and to generally make Nouse activities faster and easier. This option can be used to enable or disable the use of voice commands to help control Nouse. The various voice commands are described in detail in section 1.4. By default this option is disabled.

### 1.3.1.9 Use Mouth Click

Nouse application can utilize the movement of the user's mouth to skip countdowns (i.e., the user does not need to wait for the countdown). This can be utilized in 2 instances:

a) To allow the user to jump to click mode from navigation mode instantly;
b) For NouseBoard to jump to field selection instantaneously when hovering over a specific NouseBoard cell.

This would allow the user to perform mouse clicks and to generally make Nouse activities faster and easier (i.e., there is no countdown to move into click mode).

A mouth click can be executed simply by having the user open their mouth. By default this option is disabled. The amount that the mouth needs to be opened in order for a mouth click to be executed is controlled by the "Minimum Mouth Click Height" option (see section 1.3.1.10).

Mouth clicks can be used in the following circumstances:

- In NouseCursor mode when navigating (blue state), a mouth click will bring Nouse to the clicking state. The user can then perform one of the following:
  - Select the desired click by moving the user's nose (Standard);
  - Perform another mouth click to exit click mode and go back to navigation mode without selecting anything;
  - If "Click on Command" is enabled (see section 1.3.1.11) a left click will be executed automatically and move the user back to navigation mode;
- In NouseBoard mode, a mouth click will bring Nouse application into field selection mode for the cell that is being hovered over. The user can then perform one of the following:
  - User can select the desired field in the standard manner (i.e., move their Nose in the direction of the field to be selected)
  - Perform another mouth click and exit back to cell selection mode without typing anything.

### 1.3.1.10 Minimum Mouth Click Height

The amount that the mouth needs to be opened in order for a mouth click to be executed is controlled by this "Minimum Mouth Click Height" option. This option controls how high (in **pixels**) the user has to

open his mouth in order to perform a mouth click. The available values range from 1 to 20. The default is set to 3.

### 1.3.1.11 Click on Command

This option is used in conjunction with the "Use Mouth Click" option (see section 1.3.1.9). If this option is enabled, a mouth click while the user is in NouseCursor navigation mode will result in a left click. If it is disabled then Nouse will go to the standard clicking mode. The "Use Mouth Click" option must be enabled in order to use this option. By default this option is disabled.

### 1.3.1.12 Discrete Direction

Nouse application allows the user to control the directional movement of NouseCursor. There may be situations where users find it easier to have NouseCursor move in a different manner (e.g., users with head tremors).

**Note**: This option is only available when NouseCursor is set to Joystick mode.

Nouse application provides 3 methods for moving NouseCursor. They are as follows:

- **All Directions** - The default option. NouseCursor moves in a fluid motion emulating the exact moves of the nose in any direction.
- **8 Directions** - NouseCursor can only move in 8 directions: Up, Down, Left, Right and the 4 diagonal directions.
- **4 Directions** - NouseCursor can only move Up, Down, Left or Right.

Users who have difficulty controlling their head movements and who find it difficult to use NouseCursor should try either the 8 or 4 directions option.

### 1.3.1.13 Enable Dwell Clicking

Nouse application provides a second method for selecting a click option. The standard method for clicking is described in section 3.3 of the User Guide - Nouse Clicking mode. In the Enable Dwell Clicking mode, the application displays a pop up window with four click options (i.e., Left Click, Right Click, Double Click and Drag). See Figure 1.5.
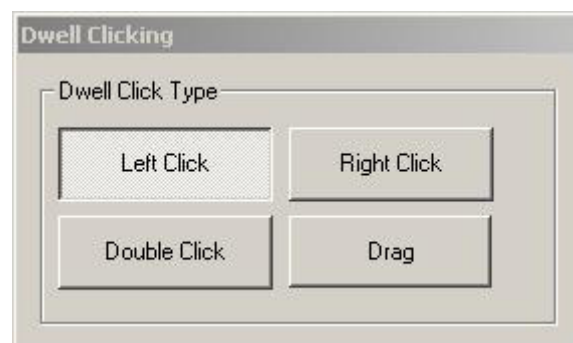


Figure 1.5: Dwell Click Popup Window with Left Click selected

As with the standard Nouse Click mode, while in navigation mode the application will countdown to zero (0). However instead of moving to the click state (i.e. as in standard click mode) the application executes

the click option selected in the Dwell Clicking popup window. Using Figure 1.4 as an example, the user would be executing a left click when the countdown reached zero. After the click NouseCursor moves back to navigation mode. The user can continuously execute "Left Clicks" by allowing NouseCursor countdown to reach zero (0).

If the user would like to select a different click option (i.e., either the Right Click, Double Click, or Drag) then the user can move NouseCursor over the desired click box and allow the countdown to reach zero (0). This will select the different click option. Once the user has executed a click, the Dwell popup window will automatically switch back to "Left Click".

By default the application is set to use the standard click mode described in section 3.3 of the User Guide. This option by default is disabled.

### 1.3.1.14 Always Left Click

This option is used for training purposes. As users start to use Nouse application it may be beneficial to use the application in a simpler mode. This option if enabled will only allow "Left Clicks" to be executed by the users when NouseCursor moves into click mode (i.e., No other clicking is possible). By default this option is disabled.

### 1.3.1.15 Lag (Average Position Over Time)

This option is useful for users that have mild tremors or shaking of their head. For these types of users, the movement of their head is not a consistent motion (i.e., due to head tremors or shaking). This can cause NouseCursor to jump as it tries to follow the movement of the nose. To provide a more consistent and smoother movement of NouseCursor, the application allows the average of recent previous positions to determine the position of the nose instead of using the information of the video feedback position. This will cause the location of the Nose to follow or lag behind the actual nose position. By default this option is disabled.

### 1.3.1.16 Activate Assumes Headwidth

In order to capture the movement of the user's nose from the Webcam feed, Nouse application defines an area (or box) where it will monitor for movements. This area or box is used to determine how NouseCursor will react to the movement of the nose. The smaller the area the application monitors the more sensitive NouseCursor will be to movements (i.e., move faster). The larger the area the application monitors the less sensitive NouseCursor will be to movements (i.e., move slower). This area or box is defined in the Calibration set described in section 2.5 when it automatically zooms in on the user's face.

Nouse application allows the user to define the size of the area or box it monitors for movement of the nose. This option ranges from 10% to 90%. By default this value is set to 25%

### 1.3.1.17 "No change back to reset" (Seconds)

While the user is using Nouse application there may be situations where the user's nose can move off the screen or make a significant motion that would cause the application to lose the nose location. In this case Nouse application will constantly try to find the user's nose while in navigation mode.

In this option, if NouseCursor does not move for the number of seconds controlled by this option, Nouse will automatically exit NouseCursor mode and go to the Face Detection stage of Calibration. By default this options is disabled or set to 9999 seconds.

### 1.3.1.18 "No motion back to reset" (Seconds)

While the user is using Nouse application there may be situations where the user's nose can move off the screen or make a significant motion that would cause the application to lose the nose location. In this case Nouse application will constantly try to find the user's nose while in navigation mode.

In this option, if Nouse application does not detect any motion from the webcam video feed for the number of seconds controlled by this option, then Nouse will automatically exit NouseCursor mode and go to the Face Detection stage of Calibration. By default this options is disabled or set to 9999 seconds.

### 1.3.1.19 Click/Calibration Box Size

Nouse application allows the user to control how sensitive the application will be to the movement of the user's nose when the application is in "click mode" (i.e., selecting a click can be configured to require a bigger movement or a very small movement). Users can choose a very sensitive setting which means the user would only need to make a small movement in selecting the desired click or they can choose a less sensitive setting which means the user would need to make a bigger movement of their nose to select a desired click. This option can be set to a number ranging from 1 to 4. By default this option is set to 1 or a sensitive movement.

Users who have trouble selecting the desired click option (i.e., they select the incorrect click option) can increase this value. The user would then require a bigger movement to select the desired click.

## 1.3.2 Advanced Settings - Visual Settings Tab

This section discusses the options in the Visual Settings tab of Nouse Advanced Settings window (see figure 1.6).
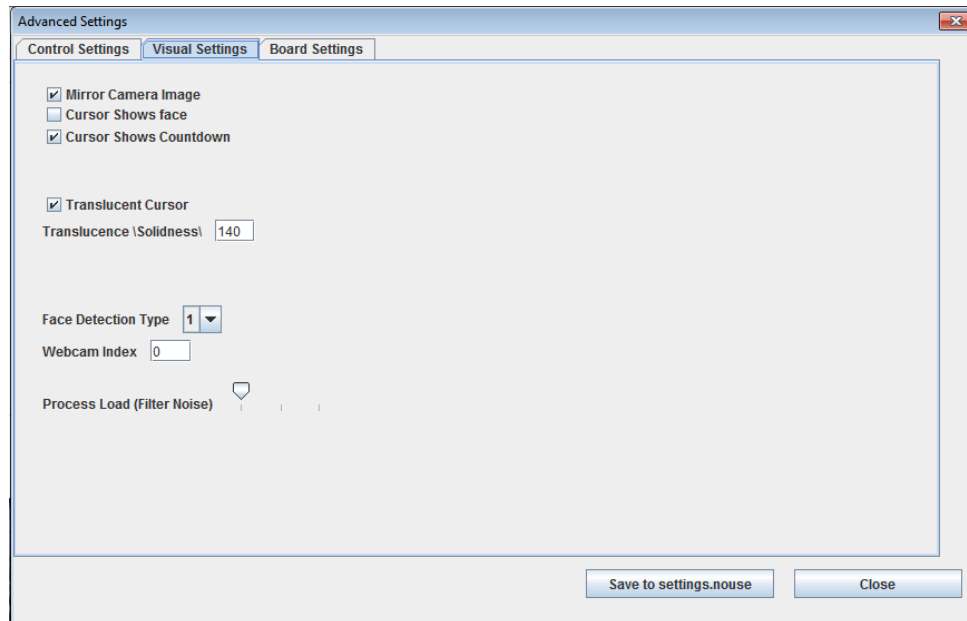


Figure 1.6: Advanced Nouse Settings: Visual Settings tab

### 1.3.2.1 Mirror Camera Image

Nouse application presents the image of the user's face from the webcam at several different points throughout the use of the application. By default the user is presented with their image as if they were looking into a mirror to make it easier for the user to navigate NouseCursor.

### 1.3.2.2 Cursor Shows Face

By default NouseCursor displays a gray background, a black crosshair and a red circle around the where Nouse thinks the user's nose is located. Nouse application allows the user to display the user's nose (from the webcam feed) in NouseCursor. It may be easier for some users to use the application when they can see their nose in relation to the crosshair instead of just the red circle. By default this option is disabled (i.e., no video feed of the user's nose). Figure 1.7 shows an example of a user with this option enabled.



Figure 1.7: NouseCursor showing user's face.

### 1.3.2.3 Cursor Shows Countdown

When the user navigates NouseCursor to a click point and NouseCursor is stopped or still Nouse application counts down before moving into click mode. With this option the user can turn the countdown

on or off depending on their preference. By default this option is enabled to provide the user with feedback on the countdown.

### 1.3.2.4 Translucent Cursor

NouseCursor background can be set to a gray background or to show the user's face. Nouse application provides one additional option called "translucent background". This option means NouseCursor will be transparent or see-through. This will allow the user to see the contents of the screen behind NouseCursor. By default this option is enabled.

In addition, Nouse application allows the user to control the degree to which NouseCursor is translucent or see-through using the "Translucence Solidness" option described below.

### 1.3.2.5 Translucence "Solidness"

This option is used in conjunction with the "Translucent Cursor" option described above. If the "translucent cursor" option is enabled, this option specifies the extent to which NouseCursor will be translucent (or see-through). The value can be anything between 0 and 255, with 0 meaning completely invisible and 255 meaning completely solid. The default value for this option is 140 or semi-transparent.

### 1.3.2.6 Face Detection Type

Each user's face consists of unique features. Nouse application has been designed to capture the general features of each person's face. However, there may be situations where a user's face is unique and as such may cause Nouse application to have difficulty in tracking. Nouse application provides three additional methods for tracking the user's face (i.e., four (4) methods in total). By default this option is set to 1 and should work well in most cases. If face detection is not working well in the calibration mode then the user can change this option to see if another method works better.

### 1.3.2.7 Webcam Index

There may be situations where the user has more than one webcam attached to the computer. This option allows the user to set which webcam Nouse should use. If there is only one webcam connected to the computer, the index should be set to 0. If there are two webcams attached, the user can set this value to 0 or 1 to select the desired webcam. This option is only loaded by Nouse when the application is launched. If a user wants to change the webcam, this value must be changed and saved and then the application must be closed and restarted.

### 1.3.2.8 Process Load (Filter noise)

This option controls the amount of information provided by the video webcam that is used by Nouse application. As a general rule, the more information used by the application the more accurate the use of NouseCursor. However, the more information that is processed by the application the more computer processing power is required. As such, Nouse application allows the user to control the amount of information processed so that users with computers that do not have powerful processors can set this option to a value that allows the application to run smoothly and not slowly.

The possible values for this option range from 1 to 3, where 1 means process the minimum amount of information (i.e., less accuracy and runs faster) and 3 means process the maximum amount of information (i.e., most accurate and requires a powerful processor). By default this option is set to 1.

### 1.3.3 Advanced Settings - Board Settings Tab

Nouse application provides the user with the ability to enter text without the need to use the standard keyboard. The "NouseBoard" is an on-screen configurable keyboard that works with Nouse application to allow a user to type hands-free. This section describes the configuration options of NouseBoard that can be modified by the user. These configuration options can be found in the Board Settings tab of Nouse Advanced Settings dialog (see Figure 1.8).
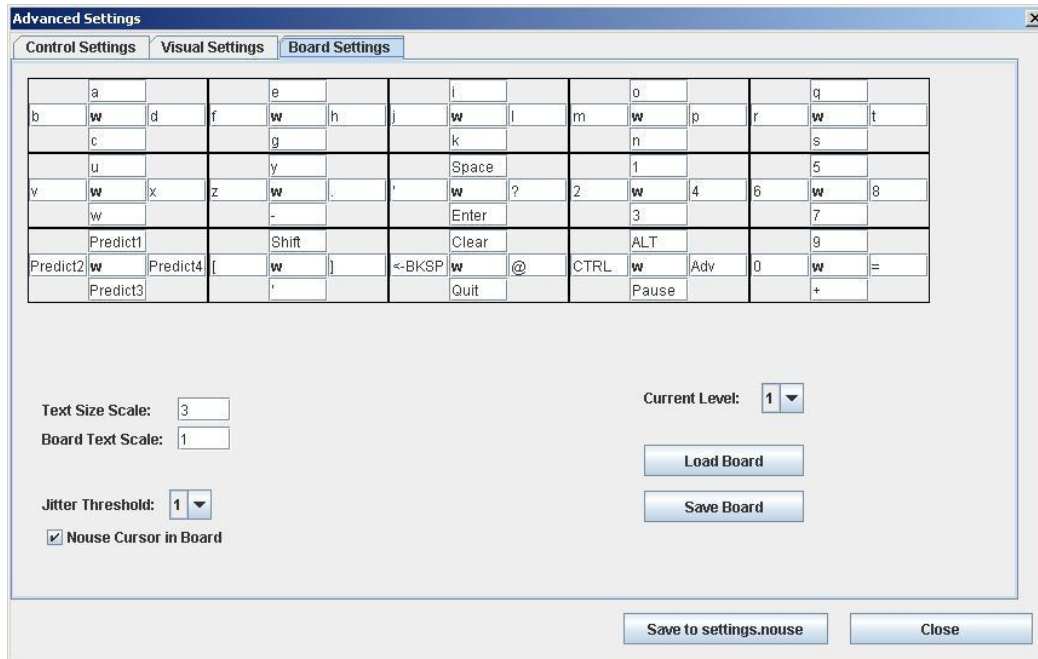


Figure 1.8: Advanced Nouse Settings: Board Settings tab

### 1.3.3.1 NouseBoard Configuration

The "Board Settings" tab displays the layout of NouseBoard keys. This layout can be changed or reconfigured by the user. This includes the modification of letters and options and where they appear on the keyboard.

In order to provide all the letters and options for a keyboard, NouseBoard uses levels to represent the different layouts. Each level or layout of NouseBoard displays a different set of letters, numbers and/or options. This is the equivalent to the standard keyboard where you can use the Shift key to get capital letters or the Alt key to get different options.

Nouse application comes with the ability to use 3 levels or keyboard layouts. The following describes the default layout for NouseBoard:

Level 1 – Generally consists of the lower case letters and numbers. See Figure 1.9a for the standard configuration.

| | a | | | e | | | i | | | o | | | q | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| b | w | d | f | w | h | j | w | l | m | w | p | r | w | t |
| | c | | | g | | | k | | | n | | | s | |
| | u | | | y | | | Space | | | 1 | | | 5 | |
| v | w | x | z | w | . | ' | w | ? | 2 | w | 4 | 6 | w | 8 |
| | w | | | - | | | Enter | | | 3 | | | 7 | |
| | Predict1 | | | Shift | | | Clear | | | ALT | | | 9 | |
| Predict2 | w | Predict4 | [ | w | ] | <-BKSP | w | @ | CTRL | w | Adv | 0 | w | = |
| | Predict3 | | | ' | | | Quit | | | Pause | | | + | |

Figure 1.9a – Standard configuration for NouseBoard layout of Level 1

Level 2 – Generally consists of the uppercase letters and the symbols found above the numbers of a standard keyboard. See Figure 1.9b for the standard configuration.

| | A | | | E | | | I | | | O | | | Q | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | w | D | F | w | H | J | w | L | M | w | P | R | w | T |
| | C | | | G | | | K | | | N | | | S | |
| | U | | | Y | | | Space | | | ~ | | | + | |
| V | w | X | Z | w | > | & | w | ! | # | w | $ | * | w | % |
| | W | | | < | | | Enter | | | _ | | | - | |
| | Up | | | Normal | | | Clear | | | Alt | | | PgUp | |
| Left | w | Right | { | w | } | Pause | w | DEL | Fn | w | Esc | Home | w | End |
| | Down | | | Adv | | | Quit | | | Tab | | | PgDn | |

Figure 1.9b – Standard configuration for NouseBoard layout of Level 2

Level 3 – For general use and can be defined by the user. See Figure 1.9c for the standard configuration.

| | W-RC1 | | | W-RC5 | | | W-CS1 | | | W-CS5 | | | W-RS1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W-RC2 | w | W-RC4 | W-RC6 | w | W-RC8 | W-CS2 | w | W-CS4 | W-CS6 | w | W-CS8 | W-RS2 | w | W-RS4 |
| | W-RC3 | | | W-RC7 | | | W-CS3 | | | W-CS7 | | | W-RS3 | |
| | & | | | | | | | Space | | | ~ | | | + | |
| $ | w | } | Z | w | . | & | w | ! | # | w | $ | * | w | % |
| | { | | | , | | | Enter | | | _ | | | - | |
| | Up | | | Shift | | | Clear | | | Alt | | | PgUp | |
| Left | w | Right | [ | w | ] | BSP | w | DEL | Fn | w | Esc | Home | w | End |
| | Down | | | Normal | | | Quit | | | Tab | | | PgDn | |

Figure 1.9c – Standard configuration for NouseBoard layout of Level 3

To select a different level the users simply changes the level number found on the "Current Level" drop box found on right hand side of this tab.

### 1.3.3.2 Configuring NouseBoard

The user can change or set the values in NouseBoard by editing one of the keyboard grids (see Figures 1.9a, b and c). NouseBoard editable grid is meant to be displayed identically to NouseBoard (see section 3.5 of the User Guide). Just like NouseBoard, the editable NouseBoard grid is made up of 3 rows and 5 columns of cells.

Each of the 15 cells in NouseBoard contains 5 fields to be filled with values; Top, Bottom, Left, Right and Center. The user can set each field of the cell to their preferred letter/number/Symbol/option by typing the letter, number or symbol into one of the cell Top, Bottom, Left or Right fields.

The center field is reserved for the background colour of the cell. The user can choose the colour of the cell background by typing one of the colour codes in the center "colour" field of the cell. Currently the available colour codes are "r" (red), "g" (green), "b" (blue) and "w" (white).

**Note:** Nouse application does not ensure all letters/numbers have been properly entered. As such, it is important for the user who re-arranges letters/number to ensure they are all placed in one of NouseBoard levels.

### 1.3.3.3 Available Special Options for NouseBoard Cells
When configuring NouseBoard, the user is free to put any character/number/symbol in any location of NouseBoard. In addition to the characters/numbers/symbols, there are also a number of other options the user can put into NouseBoard. To enter NouseBoard options the user simply types the word in the field of the cell. The special NouseBoard options are described below:

- **Blank** - Leave the option blank.
- **Space** - Type a space.
- **Enter** - Type the Enter key.
- **Shift** - Show NouseBoard's level 2.
- **Adv** - Show NouseBoard's level 3.
- **Normal** - Show NouseBoard's level 1.
- **<-BKSP** - Type the Backspace key.
- **<-BKSP.** – Type a Backspace then '.' then Space. This is especially useful when using word completion as Nouse will always put a space after a word is completed using this mechanism.
- **Quit** - Exit NouseBoard mode and go back to NouseCursor mode.
- **Pause** - Pause NouseBoard (see section 3.5.5 of the User Guide).
- **Up** - Type the up arrow key.
- **Down** - Type the down arrow key.
- **Left** - Type the left arrow key.
- **Right** - Type the right arrow key.
- **Clear** - Clear the text from NousePad.
- **DEL** - Type the Delete key.
- **PgUp** - Type the Page Up key.
- **PgDn** - Type the Page Dn key.
- **Home** - Type the Home key.
- **End** - Type the End key.
- **Tab** - Type the Tab key.
- **Predict #** - Make this a word completion location (see section below).

### 1.3.3.4 NouseBoard Word Completion
To speed up the process of typing words in NouseBoard, Nouse application provides a word prediction or word completion option. That is, the application tries to predict the word the user is trying to type. As the

user starts to enter the letters of a word, the application can present words that start with the letters that have already been typed. If the user sees the word they are trying to type they can select the word without the need to type the remaining letters of the word. To select the word the use follows the same procedure as selecting a letter.

To setup the word prediction the user configures NouseBoard by placing the word "Predict #" (where # is a positive number) in the fields of a cell. This will cause the corresponding quadrant in NouseBoard to be a word prediction or word completion quadrant. When typing in NouseBoard, these word completion quadrants will contain Nouse application's prediction of what word is being typed. If the user sees the word they would like to type from one of these words, they can select it and Nouse application will finish typing the word and then add a space at the end.

The user can decide how many NouseBoard word completion fields within a cell will be used. The default setup is 4. That is, the application is configured for 4 word completion fields named "Predict 1", "Predict 2", "Predict 3" and "Predict 4". These will then always contain the top 4 words that Nouse application believes the user may be trying to type.

### 1.3.3.5 Loading and Saving NouseBoard configurations
Nouse application allows the user to save their NouseBoard configurations to a file much like Nouse settings. This will allow different users to save their custom keyboard layouts.

To save a NouseBoard configuration, Nouse application provides a "Save Board" button found on this tab. By clicking on the button the user can select a location and name for the custom NouseBoard file. A NouseBoard file is identified by a user-defined name and a ".board" extension.

To load a NouseBoard configuration, Nouse application provides a "Load Board" button found on this tab. By clicking on the button the user can navigate the directories to find their saved NouseBoard file. A NouseBoard file is identified by a ".board" file extension. Note – Users can only load NouseBoard files that have been saved using NouseBoard save button described above.

### 1.3.3.6 Text Size Scale
Nouse application allows the user to change the size of the text displayed in NousePad. The default value is set to 3.5. Users can either increase or decrease this number to increase or decrease the size of the text displayed. Users with poor vision should set this value higher.

### 1.3.3.7 Board Text Scale
Nouse application allows the user to change the size of the text displayed in NouseBoard. The default value is set to 1. Users can either increase or decrease this number to increase or decrease the size of the text displayed. Users with poor vision should set this value higher.

### 1.3.3.8 Jitter Threshold
Nouse application allows the user to control the sensitivity in which NouseCursor moves from cell to cell on NouseBoard. Since NouseBoard uses Direct Navigation mode it may be difficult for some users to maintain the selection of a cell while awaiting the system count down to zero (0) (i.e., the cursor for the selected cell keeps moving).

This option allows the user to control how easily the user moves from a selected cell to the next selected cell. This option ranges from 1 to 5. By default this value is set to 1 or very sensitive. Users having difficulty maintaining the selection on a cell while awaiting the countdown can increase this value.

### 1.3.3.9 NouseCursor in Board

Nouse application allows the user to determine where NouseCursor will appear while using NouseBoard. By default NouseCursor is displayed while the user is using NouseBoard in the active or currently selected cell.

If this option is disabled then NouseCursor is displayed in NousePad window. Users may want to disable this option if NouseCursor is making it difficult to see some of the letters in NouseBoard.