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# ***A Detailed Analysis of RSIGuard's AutoClick Functionality***

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## Introduction

Remedy Interactive's RSIGuard software is the leading ergonomic intervention application for the office environment. RSIGuard includes many components, including BreakTimer, KeyControl, and AutoClick functions. This document describes in detail the principles behind the design of RSIGuard's AutoClick feature. It also discusses the richness and intelligence found within AutoClick, and it compares RSIGuard's AutoClick to other automatic clicking features in other software. Documentation on how to use and set up AutoClick can be found at <http://www.rsiguard.net/help/helpac.htm>.

## Establishing the Need for Automatic Clicking

Studies have demonstrated that the majority of computer-related pain results in significant part from use of a mouse or other pointing device (e.g., trackball, touchpad, or joystick). One recent study at a high-technology company performed by Goldtouch Technologies found that 70% of 59 surveyed employees had experienced pain from computing, and 75% of those people attributed the majority of their problem to mouse use.

Although better ergonomic positioning of the mouse is helpful, the fundamental problem is that users maintain a static grip on the mouse with their clicking-finger in the "loaded" ready-to-click position. This straining position, accompanied by hundreds or thousands of clicks and click-drags per day, leads to a damaging level of strain. Commonly reported pain occurs in the elbow, forearm, back of hand, palm, wrist and fingers.

Although the most frequent solution to mouse-related pain involves switching mousing hands or using different pointing devices, therapists frequently comment that this solution often simply leads to new injuries in the "other" hand or in different areas of the already-injured hand.

Using the AutoClick and KeyControl features in RSIGuard eliminates the need to maintain the "loaded" position and reduces to zero or near-zero the number of times a user needs to click or click-drag. Instead of relocating the repetition to another muscle, this effectively eliminates the repetitive activity. Although initially AutoClick does require a change in computing behavior, most people who have experienced mousing pain find that after they are used to AutoClick, it is indispensable. Those people who have never experienced mousing pain may not initially appreciate the value of changing their mousing style, but if they understand and use AutoClick then they are less likely to ever begin experiencing pointing-device-induced pain.

## What Does AutoClick Do?

When using Microsoft Windows, the most frequent mouse action is to move the pointer (the arrow that moves around on the screen as the mouse is moved) over an item and then to click. AutoClick changes the mechanics of this action by automatically clicking once whenever the pointer is moved to a new location, thereby eliminating the need for the user to click. This process change makes it so the user (a) does not need to hold his or her finger in the “loaded” ready-to-click position; (b) can lightly slide the mouse around rather than having to grip it; and (c) does not need to do the “repetitively straining” action of pressing the pointing device’s click button.

Sometimes, the final action after moving the mouse to a new location isn’t a single left click. The AutoClick and KeyControl features provide numerous techniques to prevent unintended clicks and provide several mechanisms to enable users to complete all other mouse actions without physically clicking mouse buttons.

Preventing unintended clicks is made possible through various user settings. Intelligent defaults are preset so a user does not need to understand these settings unless they wish to adjust them. AutoClick’s industry-leading set of adjustable features include:

- **Trigger Time** – Trigger Time specifies the period of time the mouse cursor must be still (after it has moved) before an automatic click will occur. The trigger time defaults to 8 tenths of a second. So, if the user moves the mouse to a new location, then 8 tenths of a second after arriving there AutoClick will click. Some people prefer to set this value very low (e.g., 2 tenths of a second), which makes mouse-work go even faster than it would without AutoClick. Some prefer a slower speed that gives them more time to think as they move the mouse around. Some users with physical disabilities that make it difficult for them to control mouse position accurately may also use a slow trigger time.
- **Trigger Distance** – Trigger Distance specifies the distance the mouse pointer must move in order for AutoClick to note that the mouse has moved to a new location. The distance is specified in pixels (less than ½ of a millimeter). Specifying a short distance makes it easy to AutoClick on nearby things, but too short a distance causes unintended small movements to yield an unintended click.
- **AutoClick Filters** – AutoClick Filters allow the user to change AutoClick’s behavior in certain software programs or over specific buttons within a software program. Programs of a certain name, for example, can default to double clicking or to no clicking at all. A user could define that AutoClick should not click on buttons of a certain name (e.g., Delete). Or a user might wish to prevent AutoClick from clicking in certain applications or have AutoClick only click in certain applications (e.g., a web browser).

- **Menu Detection** – AutoClick is aware of a user browsing in a menu and knows various rules of when to avoid clicking to prevent unintended menu browsing results (e.g., closing a menu that was just opened).
- **“User Is Typing” Detection** – AutoClick detects when a user is typing and will optionally not click during typing and for some user-definable period of time after the last keystroke. This prevents false clicks that would otherwise occur if the mouse were inadvertently moved in the middle of typing.
- **“User is Mousing” Detection** – AutoClick detects when a user clicks the mouse on their own – presumably in a situation where they prefer not to depend on AutoClick. In this scenario, AutoClick can optionally deactivate itself to stay out of the user’s way for some user-definable period of time (usually a couple seconds).
- **“Tooltip Displayed” Detection** – If the Trigger Time is set long enough that tooltip hints have time to be displayed, then this option can detect those hints and prevent AutoClick from clicking for a user-definable period of time to give time to read the tooltip.
- **“Mouse Drift” Detection** – Mouse hardware occasionally reports small mouse movements even when the mouse is still, and movement on a user’s desk can create small movements as well. If this drift occurs slowly, then AutoClick ignores the movement and does not click.
- **“Hotspot” Detection** – Some operating system enhancements (often found in pointing device software) offer a feature that moves the pointer to the default button. AutoClick detects these types of mouse movements and therefore does not click in those situations.
- **Various other detections** – There are several other techniques that AutoClick uses to detect situations in which an automatic click would not be appropriate.

RSIGuard’s KeyControl feature provides functionality that, together with AutoClick, makes it unnecessary to use the pointing device’s left and right click buttons (thus avoiding the associated postures entirely). KeyControl can also eliminate the need to use a pointing device at all:

- **Hotkey clicking** – KeyControl allows a user to perform various types of clicks through the use of hotkeys. Hotkeys exist to let a user do a single, double, triple or right click.

Two other hotkeys can be defined to let the user put the left or right mouse button into a “virtual down” position for dragging or selection (drag-lock hotkeys). In this mode, perhaps the most straining computer activity – selecting and

dragging with a pointing device – becomes a relaxed action. Furthermore, with drag lock, in addition to moving the pointer via mouse movement, the user can move the pointer with the arrow keys on the keyboard. This makes it much easier and less straining to isolate movement in the horizontal and vertical directions.

Finally, there is a hotkey to turn AutoClick's automatic clicking off until the user does the next click. This is useful in rare situations where there is a reason to move the mouse around and stop repetitively without wanting an automatic click.

- **Cursor movement** – KeyControl setup allows the user to turn the arrow keys – when used while the “Windows Key” is pressed – into a keyboard-based pointing device. This is valuable for people who do little mousing and do not want to use desk space for a mouse (to allow them to bring other frequently used devices closer), or for people who have injuries or other reasons that indicate a benefit from avoiding all mouse use.

AutoClick can also be quickly enabled or disabled from the main RSiGuard display via the AutoClick on/off button. If AutoClick is turned off, a user can still use KeyControl hotkeys to do mouse operations from the keyboard. This mode is sometimes useful for a user who has a difficult time acclimating to automatic clicking but still needs to benefit from reduced mouse strain.

AutoClick is integrated into RSiGuard's BreakTimer so that BreakTimer knows not to consider an automatic click as having contributed mouse strain. (For a detailed analysis of the BreakTimer feature, see <http://www.rsiguard.com/BreakTimerAnalysis.pdf>).

## AutoClick vs. Other Automatic Clicking Software

At least two other programs are available for Windows that automatically click when the mouse moves and then stops. However, none of the other tools contains any intelligent detection of when *not* to click, and are therefore of very limited use. We are not aware of any other ergonomic software packages that are currently shipping with an automatic clicking feature; therefore a comparison is not possible.

## AutoClick vs. Other Pointing Device Solutions

Many people have attempted to relieve mousing pain by switching the mouse to their other hand or by using a different pointing device such as a trackball or tablet. These options essentially redirect straining activity towards healthier muscle groups. This puts the new muscle groups at risk as well, which makes this a questionable long-term strategy.

AutoClick works well with any input device (e.g., mouse, trackball, tablet, touchpad). So by actually eliminating the strain rather than redirecting it, most AutoClick users will be able to use the same pointing device as they currently use and the same hand. In fact, for users who use AutoClick for all of their work, there is often a significantly reduced need for an ergonomic mouse. Why? The main advantage of an ergonomic mouse is that its shape and size better match a user's hand, allow a more neutral wrist posture, or provide easier-to-use buttons. But with AutoClick, there is no need to grip or hold the mouse so fit is a less significant issue; because fine motor activity in the hand is reduced or eliminated, so too is the significance of hand posture or button ergonomics.

## Learning to Use AutoClick and the AutoClick Tutorial Video

AutoClick is a simple feature from a user's perspective, but the first few minutes of using AutoClick will often determine user acceptance. When AutoClick is first enabled and automatic clicking begins, it is important that a user understands in advance what to expect. If not, automatic clicking will certainly confuse them and possibly lead to rejection of RSIGuard as a whole. For this reason, although not required, it can be helpful to assist a user at his or her workstation when the user first enables AutoClick.

We strongly recommend showing potential users the **AutoClick Tutorial Video**. This is available in low-bandwidth format at our website at <http://www.rsiguard.com/visuals.htm#AutoClick> or in high-bandwidth format on any RSIGuard demo CD.

To help avoid surprising the user with automatic clicks, when a user chooses to enable AutoClick in the startup Wizard, the user is given an extra notice before AutoClick turns on to remind him or her that the feature is enabled. Furthermore, the Wizard requires the user to explicitly enable the feature (it is disabled by default) to ensure that the user is aware of it being enabled.

If one is working with a user that is a good candidate for AutoClick, start by watching the user's mouse habits *before* AutoClick is enabled. It is important to differentiate between two common patterns of mouse usage that exist: (1) users who use the mouse only to point and click, and (2) users who also move the mouse pointer around just to follow it with their eyes (e.g., to point at things they are reading or observing). The former group will likely adapt to AutoClick quickly with little or no support. The latter group needs to be retrained to only use the mouse for pointing and clicking, because their extraneous mouse "fidgeting" will lead to unintended automatic clicks. Getting these users to eliminate the excess mouse pointer movement is, of course, an ergonomic benefit in itself.

## Conclusion

RSIGuard software's rich feature set – including the AutoClick functionality – makes it the industry's leading ergonomic intervention software application. AutoClick helps reduce or eliminate strain that can contribute to ergonomic injury. RSIGuard's AutoClick feature works with a wide range of pointing devices, and offers more features than any other alternative application. Users will need a little time to adjust to AutoClick, but most find it an easy and effective way to reduce strain.