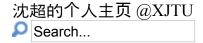# Chao Shen

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Mouse-Behavior Data for Continuous Authentication

:-:-: Mouse Data for Continuous Authentication :-:-:

Contents:

This webpage is a shared data set for mouse dynamics collected for continuous authentication, under a free environment. The webpage is organized as follows:

- 1. Introduction: About this webpage
- 2. The Data: Raw Mouse behavior data collected under a free environment from 28 subjects, for the purpose of continuous authentication.

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1. Introduction

On this webpage, we share the data, scripts, and results of our evaluation so that other researchers can use the data, reproduce our results, and extend them; or, use the data for investigations of related topics, such as intrusion, masquerader or insider detection. We hope these resources will be useful to the research community.

Common questions:

- Q1: What is mouse dynamics (or mosue biometrics)?
  Mouse dynamics, a procedure for measuring and assessing a user's mouse behavioral characteristics for use as a. Compared with other biometrics such as fingerprint or iris, mouse dynamics is less obtrusive and requires no specialized equipment to capture the biometric data. When a user wants to log into a computer system, mouse dynamics only requires him/her to provide the user name and perform certain mouse operation tasks. Extracted behavioral features are compared with those of the legitimate user. A match authenticates the user; otherwise his/her access is denied. Moreover, the user's mouse behavioral characteristics can be continuously analyzed during the user's subsequent operations to enforce a full session identity monitoring.
- Q3: How would I cite this webpage in a publication?
  TBA.

2. The Data

The data consist of mouse dynamics information from 28 subjects, each of who accomplish at least 30 data sessions. Each session consists of about thirty minutes of a user's mouse activity data (around 3000 mouse operations).

- [Mouse Behavior Data (Continuous authentication & Monitoring)](#)

Note: To save the space, the data were encoded in binary code, with following encoding format:

```
typedef struct _DATA_MOUSE
{
int x;                    // x-coordinate of mouse position
int y;                    // y-coordinate of mouse position
int ncode;               // mouse event type
UINT TimeStamp;          // timestamp of mouse evenet
UINT ProcessNo;          // process ID
} DATA_MOUSE;
```

Please see the following table for map relationship between the code and the mouse event.
512 => "MouseEvent(WM_MOUSEMOVE)", # WM_MOUSEMOVE
513 => "Click()", # WM_LBUTTONDOWN
514 => "MouseEvent(WM_LBUTTONUP)", # WM_LBUTTONUP
515 => "DblClick()", # WM_LBUTTONDBLCLICK
516 => "RightClick()", # WM_RBUTTONDOWN
517 => "MouseEvent(WM_RBUTTONUP)", # WM_RBUTTONUP
518 => "RightDblClick()", # WM_RBUTTONDBLCLICK
519 => "MiddleClick()", # WM_MBUTTONDOWN
520 => "MouseEvent(WM_MBUTTONUP)", # WM_MBUTTONUP
521 => "MiddleDlbClick()", # WM_MBUTTONDBLCLICK
You can get the details from "Mouse Input Notifications" on MSDN, see the following link:
http://msdn.microsoft.com/en-us/library/windows/desktop/ff468877(v=vs.85).aspx

Common questions:

- Q1: How were the data collected? What instructions were given to the subjects?
- A free experimental environment was established to collect the mouse behavior data in this study. We developed data collection software that runs as a background job, starts monitoring the subject's actions when the subject's login occurs and stops running when the subject's logout occurs; the software is totally transparent and does not affect other applications. Mouse behavior data were collected during subjects' routine computing activities, which mainly cover the mouse actions under the application of Internet surfing, word processing, online chatting, programming, and online games. This setting reflects a real computing environment. During the course of data collection, all subjects were asked to use mouse to do their routine work for about thirty minutes long, which representing one data collection session. Whenever the subject moves or clicks the mouse, the data collection software records the event type (i.e., mouse move or mouse click), the position of the event occurred, the timestamp when the event occurred, and the application information in which the event occurred. In this way, mouse activity data are collected in terms of sessions, and every session consists of about thirty minutes of a user's mouse activity data.

- Q2: How about the apparatus used in this study?
- We set up several desktops to collect the data, and all of them were connected to a central server via the Internet. The server stores the collected data in an internal database, along with the subject ID. The desktops are HP workstations with a Core 2 Duo 3.0 GHz processor and 2.0GB of RAM; they are equipped with identical 17" HP LCD monitors (set at 1280×1024 resolution). We equipped the computers with a USB HP optical mouse, running the Windows XP operating system. The server configuration is a Dell PowerEdge server with an Intel Xeon X5677 3.46 GHz Quad Core Processor and 12.0 GB of RAM, running the Windows Server 2003 operating system.

Comments are closed.

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