MOUSE DATA ACQUISITION V1.4

USER GUIDE

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Team

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Funding and Collaborators

Project developed at Centre for Development of Applied Instrumentation in Agriculture, under supervision of professor Dsc. Roberto Alves Braga Jr, from Engineering Department, partialy funded by CNPq, Fapemig, Capes and Finep..

Objective

To collect movement data from a computer mouse cursor on and out of a surface.

Dates

Project Start: 20/09/2009

Last Actualization: 18/02/2014

Software Register in National Institute of Industrial Property

Registration Number: BR 51 2014 000792 8 (25-Aug-2014)

Type of Registration: *Software free to use.*

Download site http://repositorio.ufla.br/jspui/handle/1/4564

Reference: , SILVA, M. M. DA; NOZELA, J. R.; CHAVES, M. J.; BRAGA JR, R. A.; RABAL, H. J. Optical mouse acting as biospeckle sensor. Optics Communications, v. 284, n. 7, p. 1798–1802, 2011. Elsevier B.V. Disponível em: <http://linkinghub.elsevier.com/retrieve/pii/S0030401810013696>. Acesso em: 27/5/2013. (DOI: 10.1016/j.optcom.2010.12.037)

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1. Basic considerations

This section is a short presentation of the software, of the tools utilized to create the final product and of the installation process.

1.1 Programming language utilized

The project was implemented using the Java programming language. The NetBeans 6.7 was the Integrated Development Environment utilized. It was also used Java Robot class package

1.2 Generated files

The program saves the images in bitmap picture image format (".bmp"). All the others generated files are text files (".txt").

1.3 Installation and use

This is a java executable program (".jar"), so it is not necessary to install it. But it is necessary the Java Virtual Machine (JVM) working on the computer. Almost every computer nowadays already has the JVM installed.

To run it try a double click on the jar file. If it doesn't work, verify if the computer has the JVM installed. To do it type on cmd (for Windows computers) or on terminal (for Linux computers):

>> java –version

This command will show if the computer has installed any JVM. If the computer doesn't have the JVM working, install it and try again. If the computer has the JVM working, then try open the executable file on cmd or terminal using the follow command:

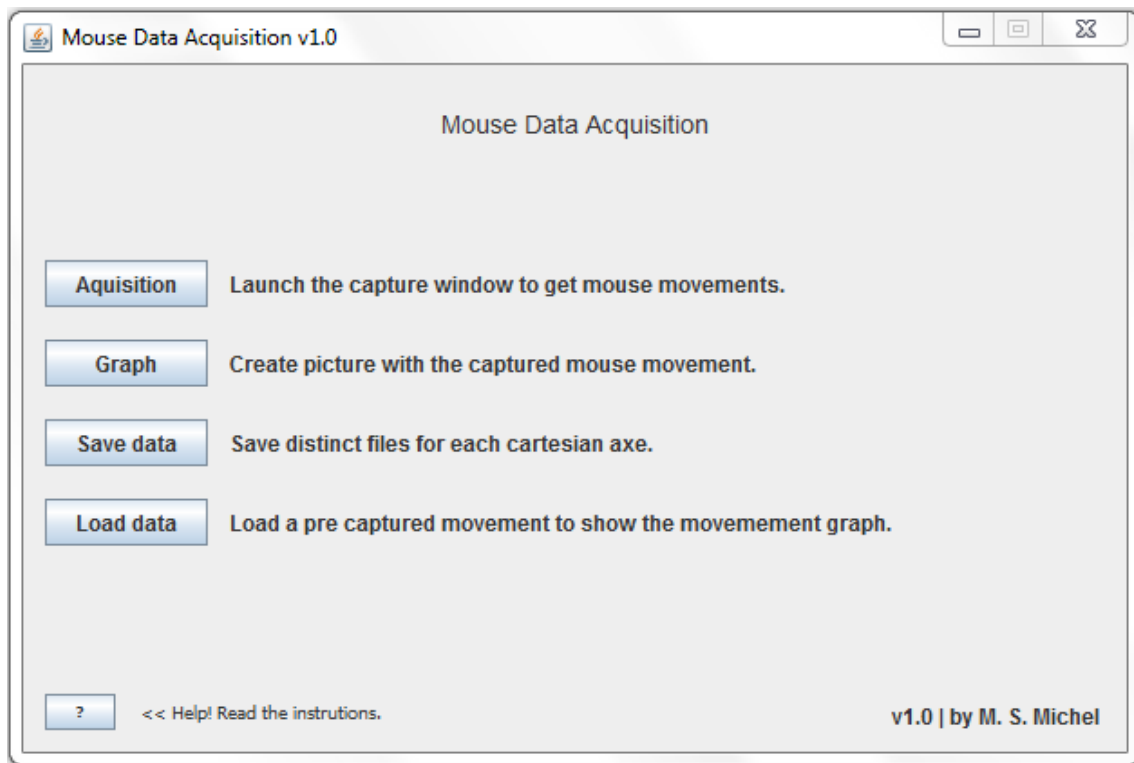>> java –jar MouseDataAcquisition_Windows_v.b1.4.jar

To use this command it's necessary the cmd path be on the folder of the jar file.
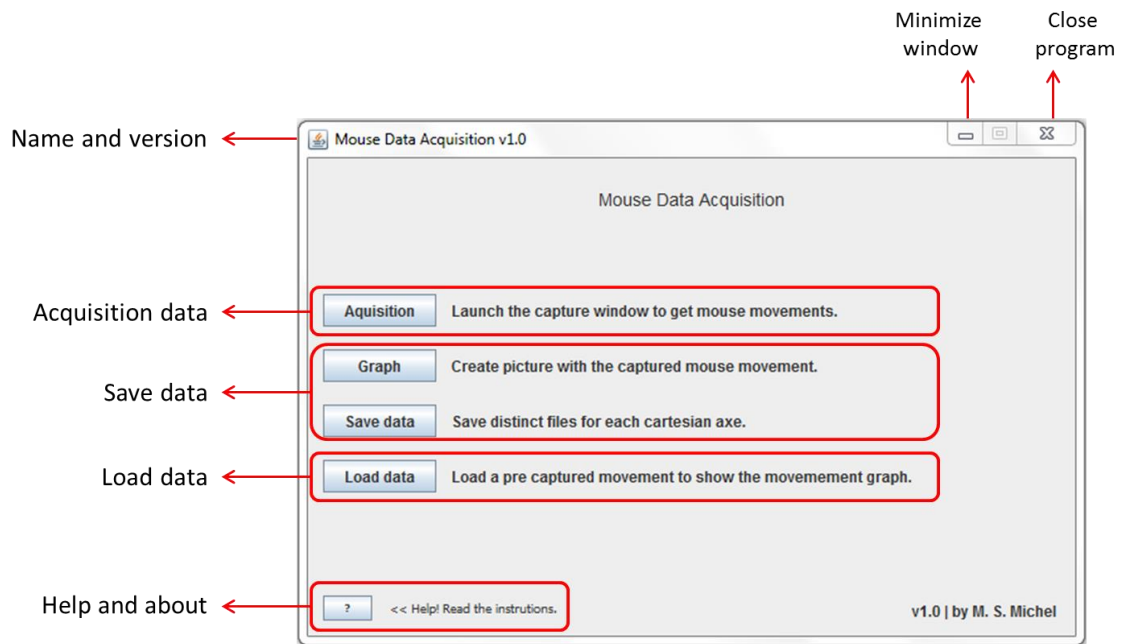
1.4 Applications

The computer mouse has an efficient detector of movement based on optical devices. The software can be used with the mouse working upon a surface or out of it, however with some changes in the setup (Silva et al 2010).

2. Overview

This is the Mouse Data Acquisition v1.0 main window.

The program has three functionalities: data acquisition, view and save the data and load data, as detailed as follow.

- Name and version:

At left top in the window you can find the name of the program you are using. Always check if the manual, documentation or information that you have refers to the same program and the same version you are using.

- Minimize window and close the program:

At right top in the window there are buttons to minimize window and to close the program. **There is no** button to maximize window, it cannot be resized.

- Acquisition data:

The acquisition button is the first step to initiate the acquisition data process. It launches the capture window to register the mouse cursor movement.
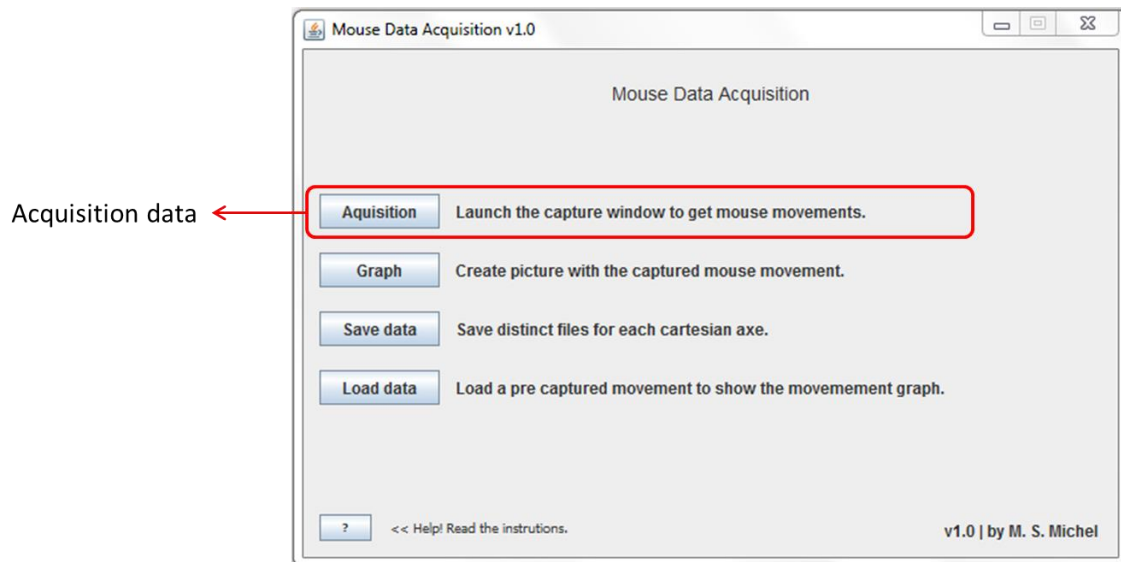
- Data view and save:

After the acquisition process, the data can be visualized as image and saved in separated text files.

- Load data:

A pre-captured data can be visualized again.
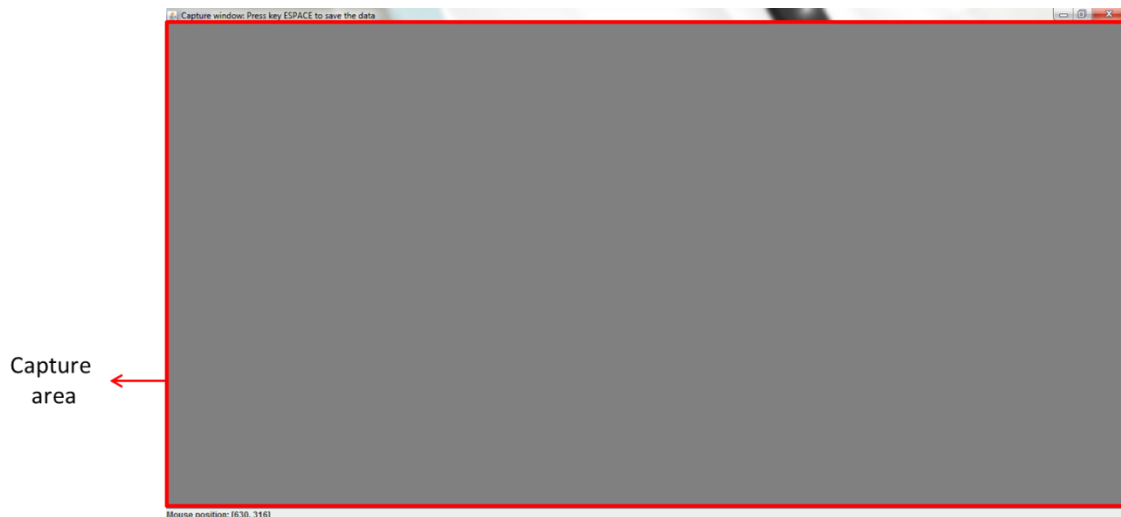
3. Acquisition data

This is the first and the most important step on the acquisition data process in this software. To initiate the acquisition of the data, just press the button "Acquisition" on main window.

Acquisition data ←

When you do that, a capture window, will be opened in maximized size. At that time, the mouse cursor position will be set automatically to center of the computer screen.

The capture window has a gray area inside of the capture window. When the mouse cursor is on the gray area, every single new coordinate took by it will be registered.

Capture area

If the mouse cursor is outside of the capture area, the color of this area will change to a light gray, a message at the status bar will be shown and the movements are not being saved. The capture area becomes gray again when the mouse cursor is inside it, and then the movements are registered again.

Capture area

Status bar message

To save the data and other functions on the capture window you have to use the predefined shortcut keys.
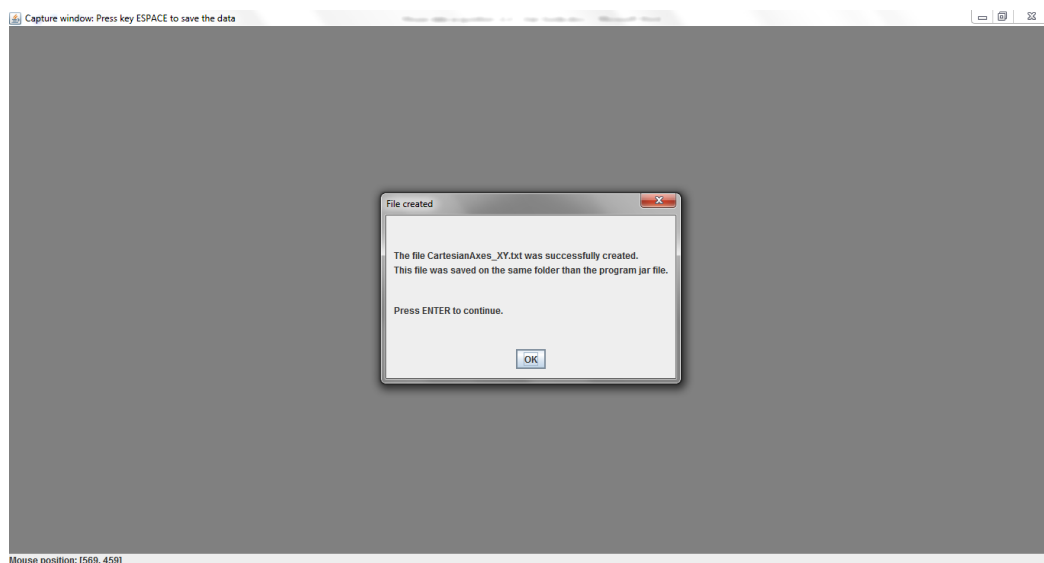
3.1. Shortcut keys

There are three shortcut keys that you have to know on the capture window. The most important of them is the save data shortcut, because the data only can be saved by the shortcut key. The other two are to reset capture process and to close the capture window.

Those shortcut keys are **only** available on the capture window.

3.1.1. Key Space - Save data

To save the captured movement to a text, file press the key "SPACE" on your keyboard. Two text files will be saved, one of them with the number of movements and the other with the Cartesian coordinates. Their names are CartesianAxes_XY.txt and NumMovements.txt respectively. When you press this key a message will appear informing that the data was saved successfully.

IMPORTANT: after saving the movements, the mouse cursor data keeps being captured, than if you press the key "SPACE" again, all your data will be overwritten.
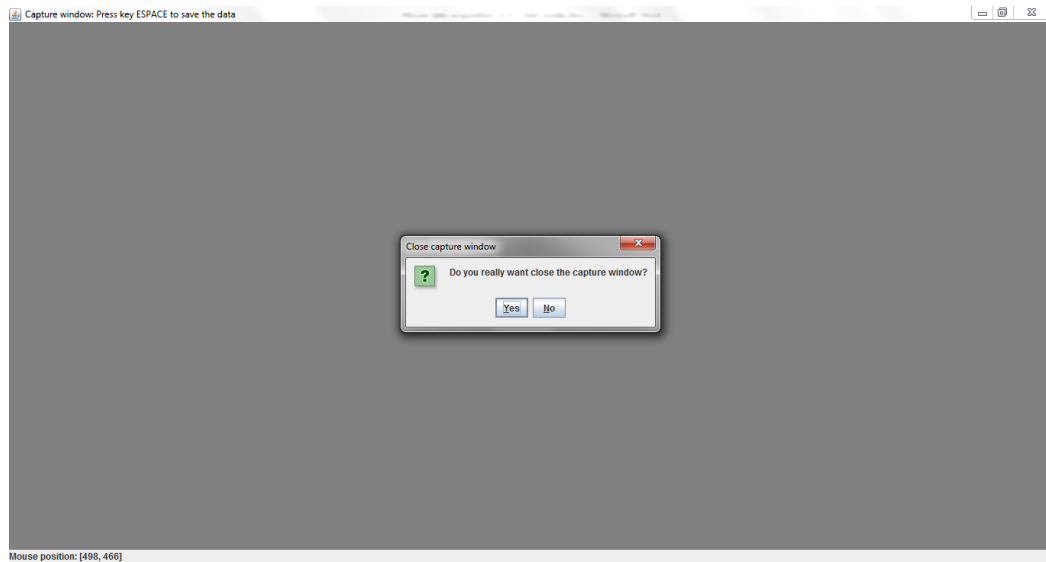

3.1.2. Key R - Reset the capture process

To restart the capture press the key "R" on your keyboard. It won't display a inform message. When you press this key, the mouse cursor position will be set to the center of the computer screen and all the information captured by this time will be erased.
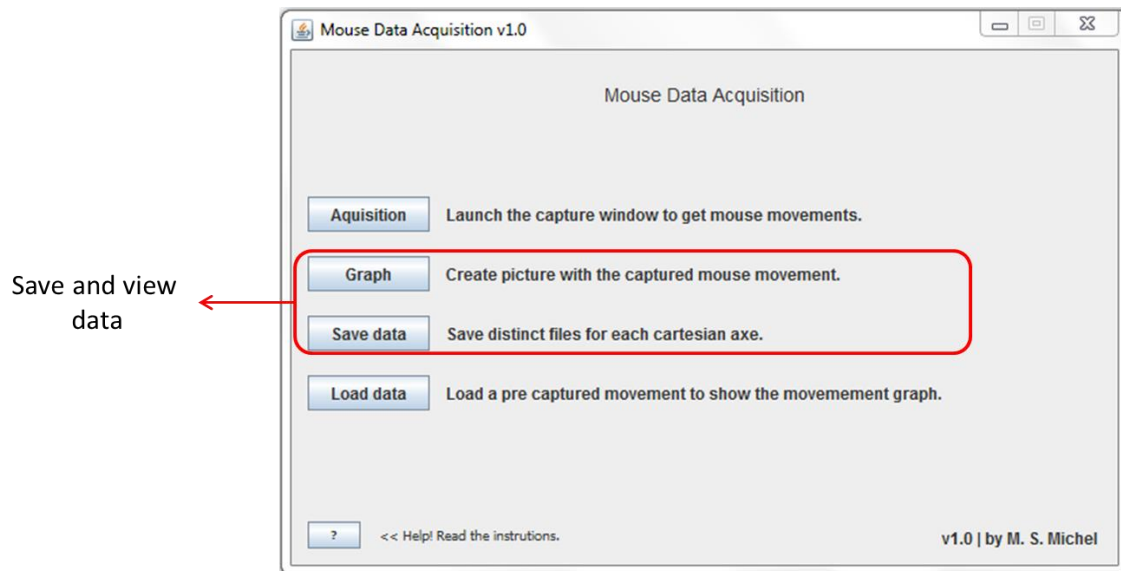
3.1.3. Key F - Close capture window

After finish the acquisition process, the capture window can be closed just pressing the key "F" on your keyboard. Doing that, a confirmation message will appear.

Close capture window

? Do you really want close the capture window?

Yes   No

Mouse position: [498, 466]

However, you can do it, also, by the classic way, just pressing the button X on right top window. In this last case a confirmation message won't appear.
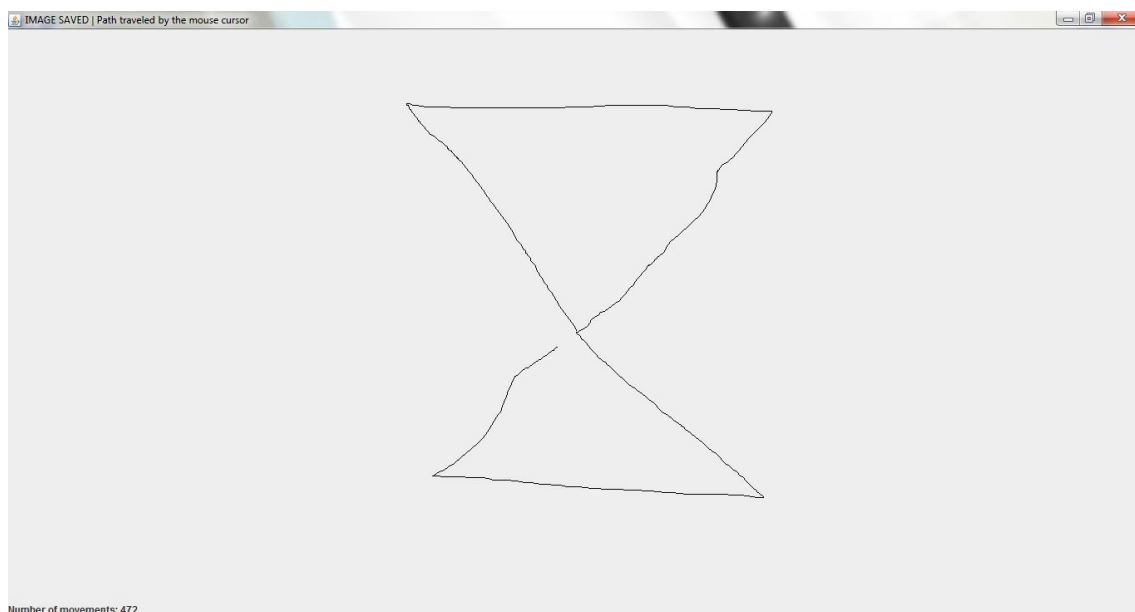
4. Data view and save

After the acquisition of the data process, you can view the captured data in a picture form. It describes the path traveled by the mouse cursor. You also are able to save those files in separated files to a post processing step.
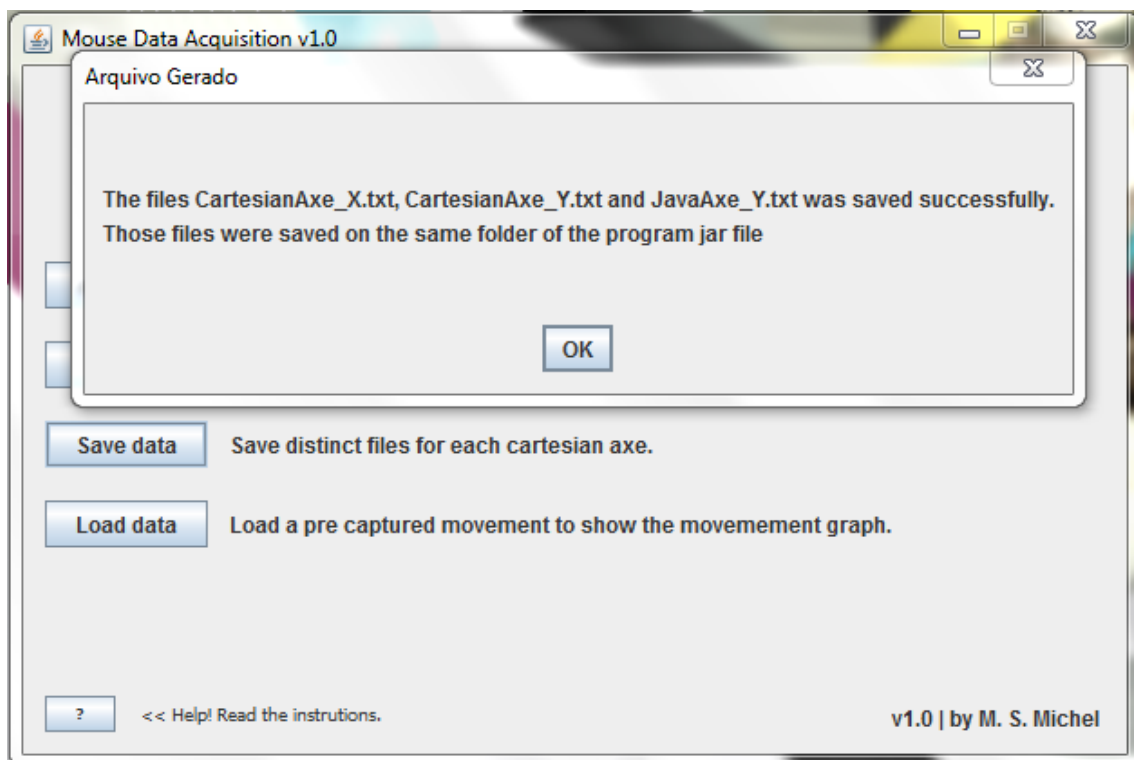

- Button Graph:

It creates a picture that shows the path traveled by the mouse cursor of the movement captured. It also saves this picture with the name Mouse_path.bmp. As the name says, the image format is bitmap picture (.bmp). The image is saved on the same folder where the jar program is.
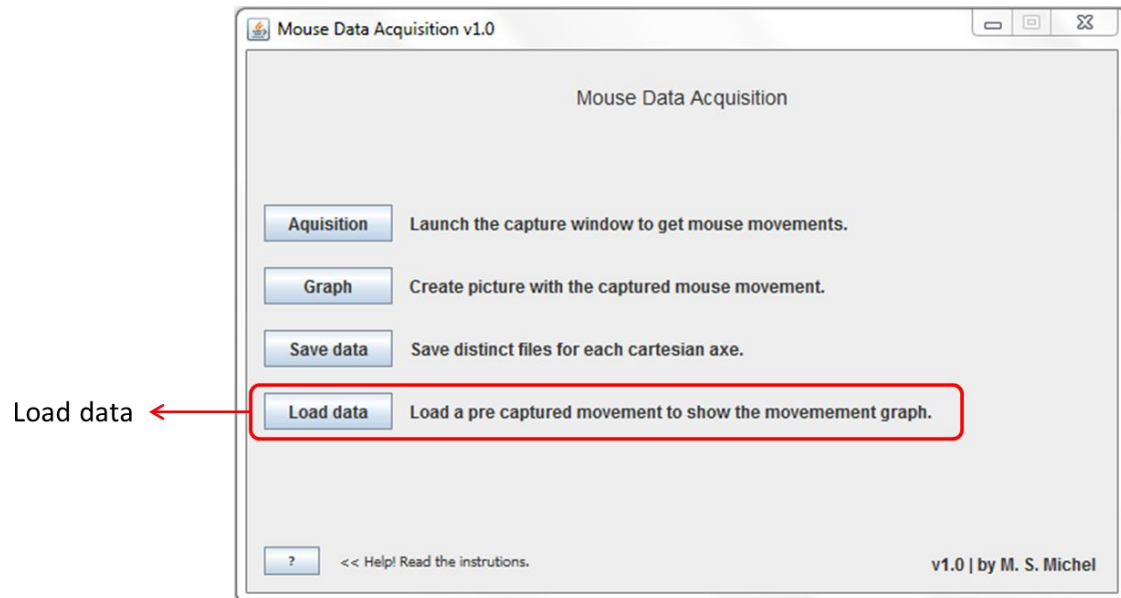
- Button Save data:

Pressing this button, the program creates three text files called CartesianAxe_X.txt, CartesianAxe_Y.txt and JavaAxe_Y.txt.

The file CartesianAxe_Y.txt has only the Y Cartesian coordinates took by the mouse cursor on the movement. The file CartesianAxe_X.txt has only the X Cartesian coordinates took by the mouse cursor on the movement. The file JavaAxe_Y.txt has only the Y Java coordinates took by the mouse cursor on the movement. (The Java programming language has coordinate axes different from the Cartesian axes). The Java reference point (0, 0) is on left top corner and not in left bottom corner, as usually. The X Java axe is the same than the X Cartesian axe, then it isn't necessary create a JavaAxe_X.txt file, because it would be the same than the CartesianAxe_X.txt.
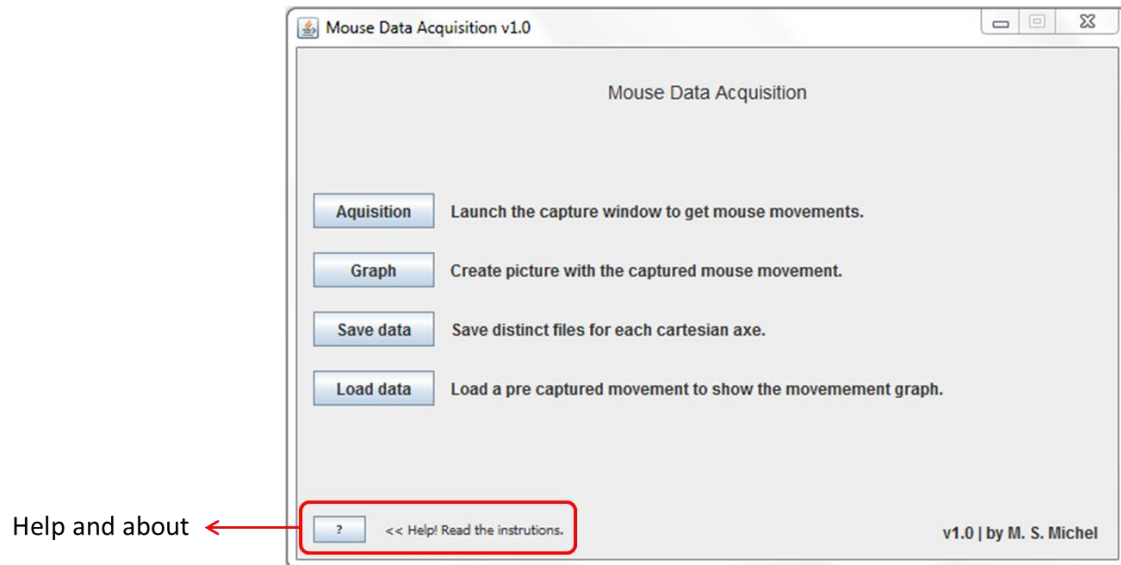
5. Load data

The program can load a pre-captured data to create the picture of the movement done by the mouse previously.

Pressing the button Load data, the files CartesianAxes_XY.txt and NumMovements.txt, of a folder chosen by you, will be loaded. With those data loaded, the program will create and save a picture with the path traveled by the mouse cursor on that capture.

6. Program version and details

The program details as version and authors contact can be found on button Help in the main window.

Help and about

Observations:

1- The files created by the program are used by it until the end of the program execution. So if you want to save the data, keep a copy of the files inside the folder where they are.

2- Always make a copy of the desirable results. In the next execution of the program or the next movement capture ALL DATA WILL BE OVERWRITTEN WITHOUT CONFIRMATION, even the picture saved.

Thanks for using our program.

This software is totally free for use in research and other noncommercial activities.

If you want to kwon how to use the mouse cursor movement information on speckle experiments read the follow paper:

SILVA, M. M. DA; NOZELA, J. R.; CHAVES, M. J.; BRAGA JR, R. A.; RABAL, H. J. Optical mouse acting as biospeckle sensor. Optics Communications, v. 284, n. 7, p. 1798–1802, 2011. Elsevier B.V. Disponível em: <http://linkinghub.elsevier.com/retrieve/pii/S0030401810013696>. Acesso em: 27/5/2013. (DOI: 10.1016/j.optcom.2010.12.037)

If you used this software in your experiments, please cite the paper property.

Any doubt or suggestion, please get in touch.

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