

Mouse Click Recorder Program

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General Information



What is the Mouse Click Recorder Program?

The Mouse Click Recorder is a new software program that increases the independence of the visually impaired by allowing them to review a digital image. The MCR program can provide image annotation in a format that is easy for a blind person to use and is designed for a sighted assistant to run while its output is accessible for the blind. When using the mouse click recorder program, a sighted person can highlight a point of interest that a blind person can reference.

Imagine that a sighted person points to several locations on an image displayed on the screen of a computer. The person makes different comments while pointing at each location. The mouse click recorder program allows a sighted person to record coordinates clicked by a mouse on an image and save these coordinates into a generated output file that includes the description of the image, the location (x and y coordinates) of the mouse click, and a note describing the location.

General Overview of Usage

The Mouse Click Recorder program is stored in a .jar file that runs similarly to an .exe (executable) file. It can be downloaded from the UCSD Grozi website. The user must have the most recent Java Runtime Environment installed on their computer. (JRE is a free application that contains the minimum requirements to run a .jar file.) Once this is done, the user can simply double click on the .jar file for the program to start running.

The MCR is a simple program that writes to file the location of any mouse click on an image. It provides the user an opportunity to leave a note next to any mouse click location. Suppose the input file is "input_file.jpg." After clicking on the image with MCR, the generated output file would appear in the same folder named "input_file.txt." This output file would contain information of the mouse click pixel coordinates and label associated with that coordinate. The MCR program is able to open any .jpg, .bmp, .gif, or .png image as long as it is stored within a folder on his or her computer.

Example of Applicability of Program

The Mouse Click Recorder program has applicability to blind professionals in a number of jobs. Given an image of any real-world object, a form of measurement, and several clicked coordinates of the image from a sighted assistant, a blind person can calculate and gain a better perception of the dimensions of real world objects. For example, a blind biology student can use photography as a recording tool to track a plant's growth over time.

The student is provided a jpg image of a plant like the one shown in Figure 1, and asked to determine the height of the plant. The jpg image also contains a picture of a ruler next to the plant. The student can calculate the height of the plant, after determining the pixel locations of the bottom and top of the ruler as well as the bottom and top of the plant with the help of his sighted assistant (to click the designated locations). The blind biology student may now review an ASCII file to get the recorded pixel coordinates from the image along with related notes

Here is an illustrative example:

Given an image **plant.jpg**, let the plant be P pixels vertically and let the tape measure be T pixels vertically.

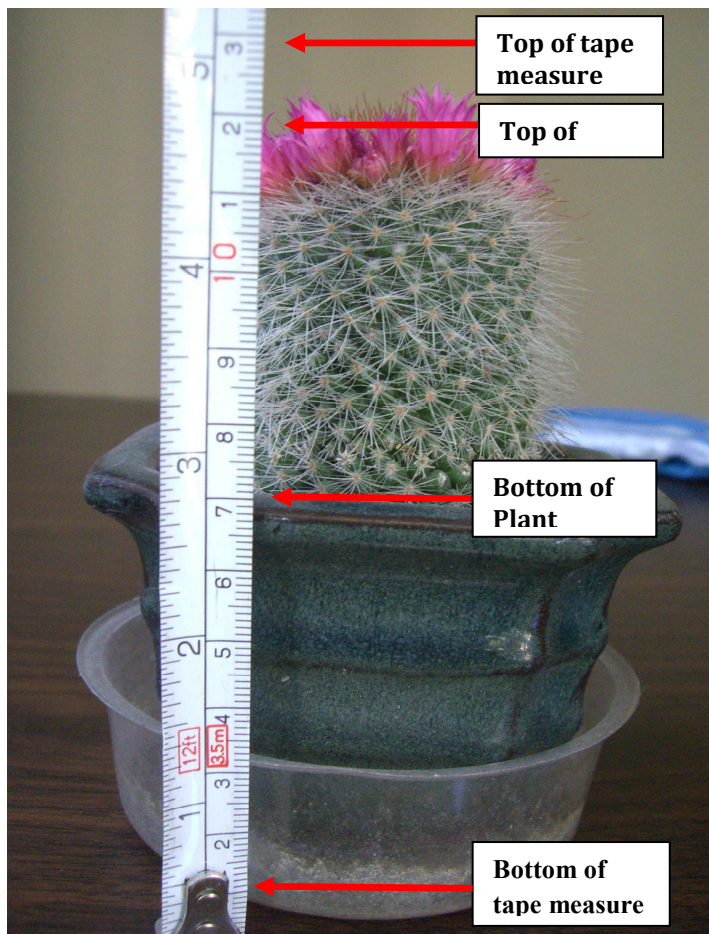


Figure 1 Plant Measurement

After clicking on the image and marking the top and bottom of the plant, and the top and bottom of the ruler, the output file **plant.txt**, should contain the annotated coordinates:

<u>Row</u>	<u>Column:</u>	<u>Comments:</u>
127	451	Top of Plant
137	59	Bottom of Plant
132	255	Top of ruler
136	5	Bottom of ruler

Therefore, to compute the height:

$$P = \text{top of plant} - \text{bottom of plant} \\ = 451 - 59 = 392$$

$$T = \text{top of ruler} - \text{bottom of ruler} \\ = 255 - 5 = 250$$

Suppose the tape measure is in meters, H = 1.0 meter. Then to compute the total height of the plant:

$$\text{Total} = H * P / T \\ = 1.0 * 392 / 250 = 1.57 \text{ m}$$

Why XML?

XML (Extensible Markup Language) is a set of rules for encoding documents electronically. It's a flexible and efficient way to store, transmit, and express data over the internet. Many applications have adopted it as their data format, and the availability of comprehensive XML development libraries makes it easy to add support for XML to new and existing applications. For this reason, MCR's shift towards creating an option to generate XML code is to allow the program to become an open-source project. In this way, we can establish a large user-base to test the program and provide useful feedback, or to allow others with the same goal as Grozi to adopt MCR into their own project.

Mouse Click Recorder Installation Procedures

Downloading Java Runtime Environment

1. Go to <http://java.com/en/download/index.jsp>
2. Click on **free Java download** to download the most recent JRE on your computer.

Downloading MCR

1. Go to <http://grozi.calit2.net/>
2. Under the '**downloads**' section, click on the '**Mouse Click Recorder Software**' link.
3. Click the most recent version. A pop up window will appear, click '**save**' to save the file. The Mouse Click Recorder program should now be on your computer in zip format.
4. Extract the **MouseClicker.zip** file.
To extract a zip file to a specific location in Windows, right click on the file, click **Extract file**, and select the path of the location you want to extract the file to.
5. Double click on the **MouseClickRecorder.jar** file to run the program.

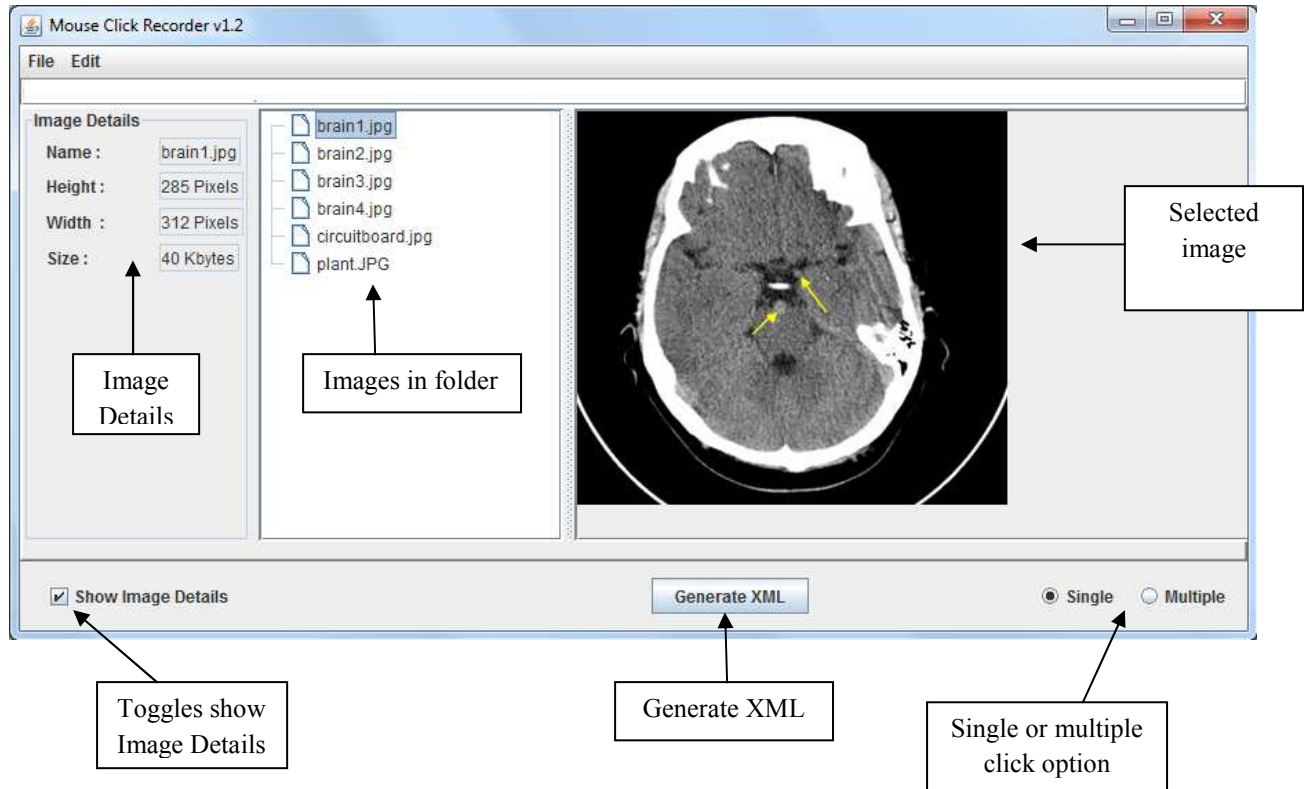
What is included with MCR installation package

The user will find the following files in the mouse click recorder folder:

- a. The **MouseClickRecorder_v#.jar** file that runs the MCR program.
- b. **Lib** folder: Contains code that allows mouse clicker to run on your computer.
- c. **SampleImage** folder: contains the following images:
 - a. Brain images **brain1.jpg, brain2.jpg, brain3.jpg, brain4.jpg**
 - b. Plant image **plant.jpg,**
 - c. Circuit board image **circuitboard.jpg**
 - d. Text file **brain1.txt, plant.txt**
The text file is a sample text file that contains labels with coordinates that represent locations on the image **brain1.jpg** and **plant.jpg** that have been clicked with a mouse beforehand.
 - e. XML file **brain1.xml**
This XML file is a sample XML file that contains labels with coordinates that represent locations on the image **brain1.jpg** that have been clicked with a mouse but in XML format.
- d. Documentation of how to run the program.

Running the Mouse Click Recorder

User Interface



- **Image details:** Display the description of the image – filename, pixel width and pixel height, and the size of the file. Image details can be toggled on and off to hide/show the panel.
- **Images in folder:** All images in the opened directory will be displayed in the file listings. MCR can only read .jpg, .gif, .bmp, .png images.
- **Single button:** Allows user to enter a label in the textbox, press and click on a point in the picture. MCR will store the coordinate under that label.
- **Multiple click button:** Allows user to enter a label in the textbox and click on multiple points in the picture. MCR will store all of these coordinates under the same label.
- **Selected Image:** The selected image will appear on the right hand panel once clicked.
- **Generate XML:** Creates an XML output file based on the coordinates clicked and the labels associated with the coordinates.

Generated Output File Format

The MCR program will generate an output file with the same name as the image that was clicked.
i.e. Given a file named **filename.jpg**, the MCR program will create an output file in the same directory named **filename.txt**.

The output file will contain the following information:

- Header with image details – version number, filename, pixel height and width, file size
- Pixel row
- Pixel column
- Label associated with clicked coordinates (Comments)

i.e. Given an image 8.5 inches wide by 11 inches tall, 4 possible corners could be:

- upper left corner (0,0)
- upper right corner (0, 849)
- lower left corner (1049,0)
- lower right corner (1049, 849)

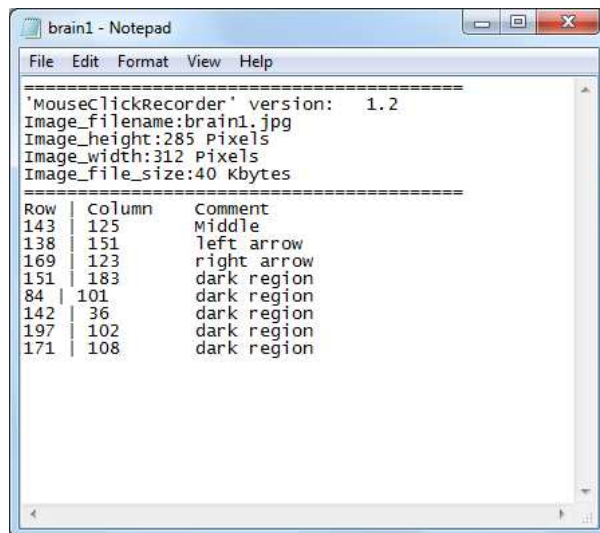
Each line of the generated txt file would contain coordinates of the mouse clicks and a label/note.

i.e. output file: "200 | 300 picture tag"

" ... | ... center of brain area"

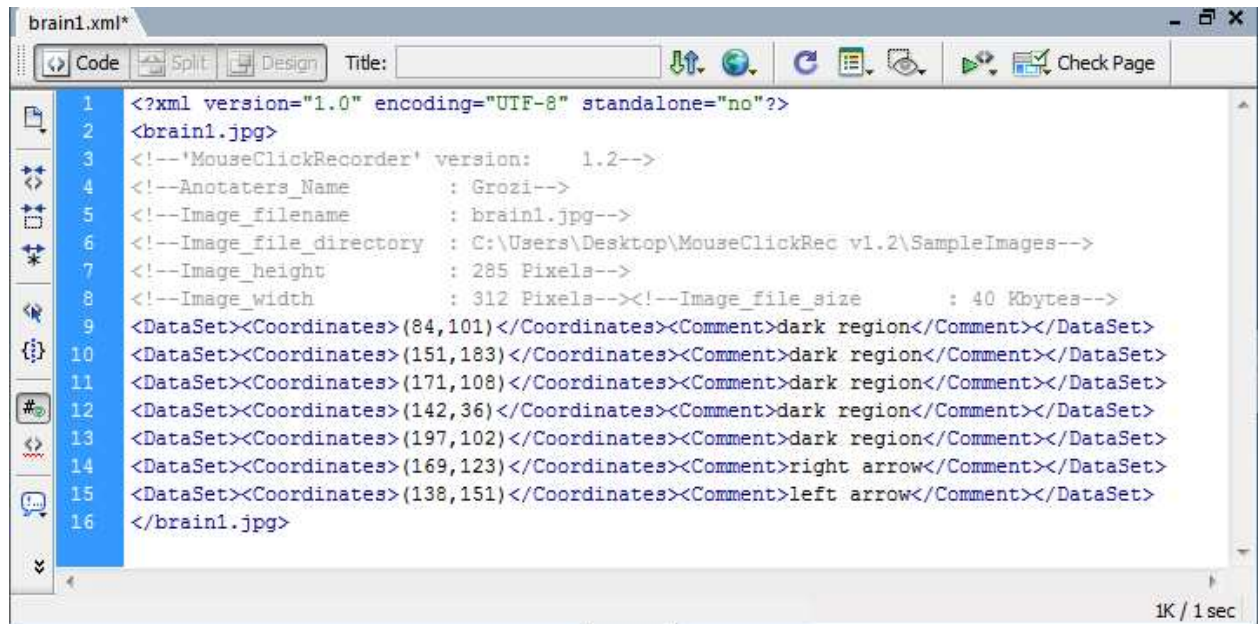
" ... | ... dark region of brain"

... ..



```
brain1 - Notepad
File Edit Format View Help
=====
'MouseClickRecorder' version: 1.2
Image_filename:brain1.jpg
Image_height:285 Pixels
Image_width:312 Pixels
Image_file_size:40 kbytes
=====
Row | Column | Comment
143 | 125 | Middle
138 | 151 | left arrow
169 | 123 | right arrow
151 | 183 | dark region
84 | 101 | dark region
142 | 36 | dark region
197 | 102 | dark region
171 | 108 | dark region
```


Generated XML File Format



```
1 <?xml version="1.0" encoding="UTF-8" standalone="no"?>
2 <brain1.jpg>
3 <!--'MouseClickedRecorder' version: 1.2-->
4 <!--Anotaters_Name : Grozi-->
5 <!--Image_filename : brain1.jpg-->
6 <!--Image_file_directory : C:\Users\Desktop\MouseClickedRec v1.2\SampleImages-->
7 <!--Image_height : 285 Pixels-->
8 <!--Image_width : 312 Pixels--><!--Image_file_size : 40 Kbytes-->
9 <DataSet><Coordinates>(84,101)</Coordinates><Comment>dark region</Comment></DataSet>
10 <DataSet><Coordinates>(151,183)</Coordinates><Comment>dark region</Comment></DataSet>
11 <DataSet><Coordinates>(171,108)</Coordinates><Comment>dark region</Comment></DataSet>
12 <DataSet><Coordinates>(142,36)</Coordinates><Comment>dark region</Comment></DataSet>
13 <DataSet><Coordinates>(197,102)</Coordinates><Comment>dark region</Comment></DataSet>
14 <DataSet><Coordinates>(169,123)</Coordinates><Comment>right arrow</Comment></DataSet>
15 <DataSet><Coordinates>(138,151)</Coordinates><Comment>left arrow</Comment></DataSet>
16 </brain1.jpg>
```

The MCR program also has the option to generate an XML output file based on the coordinates clicked and the labels associated with it.
i.e. Given a file named **filename.jpg**, the MCR program will create an output file in the same directory named **filename.xml**.

The output XML file will contain the following information

- Header with image details – version number, file name, annotators names, pixel height/width, and file size.
- Coordinates (row, column)
- Comments

Note: Information in XML file should resemble the generated output. The only difference is the added annotator's name field in the XML file.

Mouse Click Recorder Tutorial

Step-by-step instructions on how to get started with the Mouse Click Recorder Program.

1. Start the program.

Double click on the .jar file to start up the MCR program.

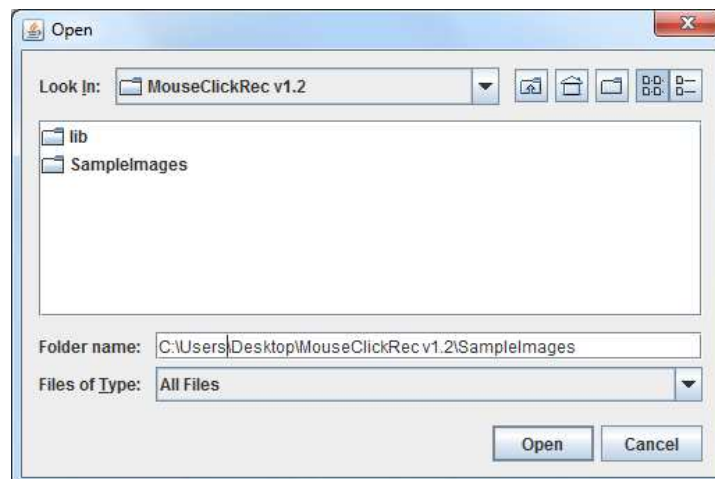
2. Input your name

The MCR program will immediately bring you to an input name window like the one featured below. It will prompt for you to enter you name. This is so labels can be associated to the appropriate authors in the generated XML file.



3. Select the folder that contains the images.

Afterwards, the MCR program will immediately bring you to a file open window like the one featured below. MCR can only open folders, hence if there are any image files that you wish to open, move them into a folder. Then select the folder that contains the image you wish to click on.



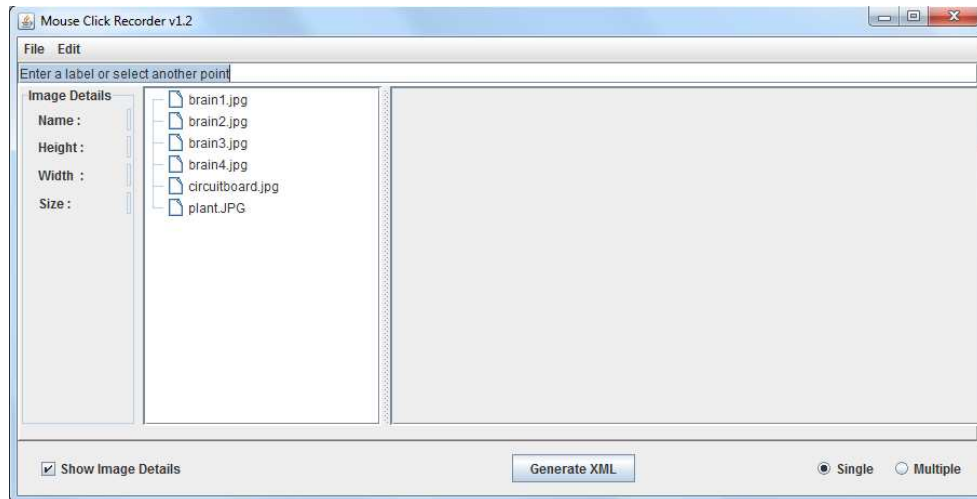
4. Mouse Clicker Interface.

Once you have selected the folder with the image(s) inside, the following window should appear with a list of all the image files in that folder directory. Notice the check box and the 'Single' and 'Multiple' option at the bottom of the window.

Show Image Details: toggles details about the selected image. The default is checked.

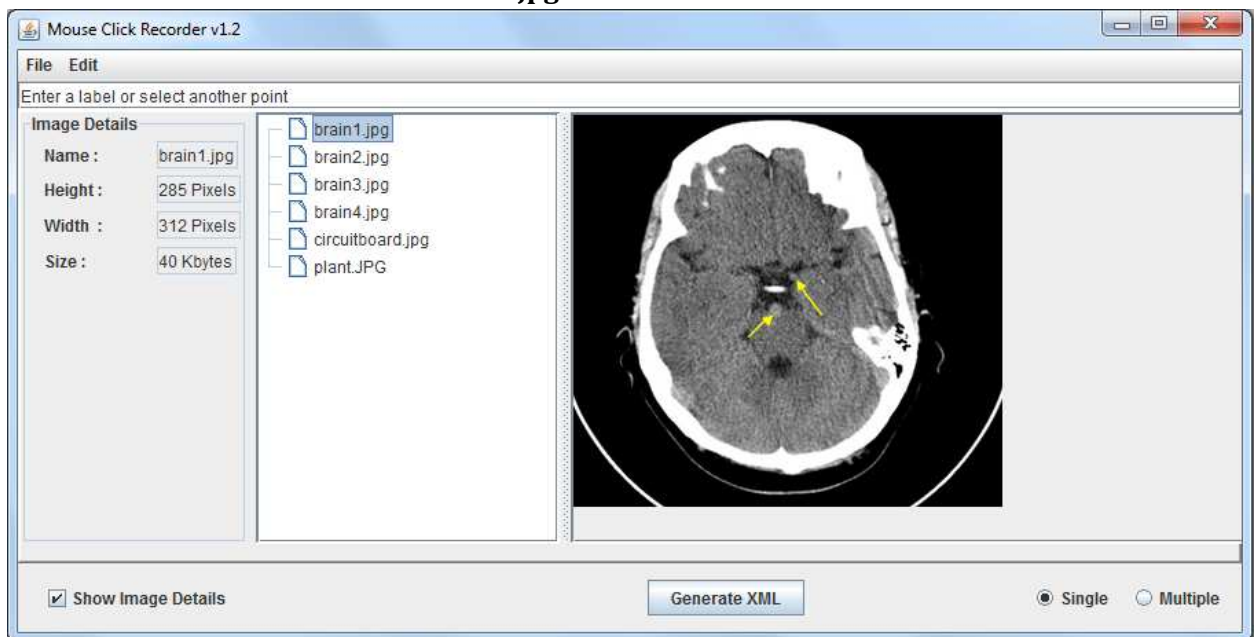
Single: Stores one coordinate to one label. This is the default option.

Multiple: Stores multiple coordinates to one label.



5. Select an image.

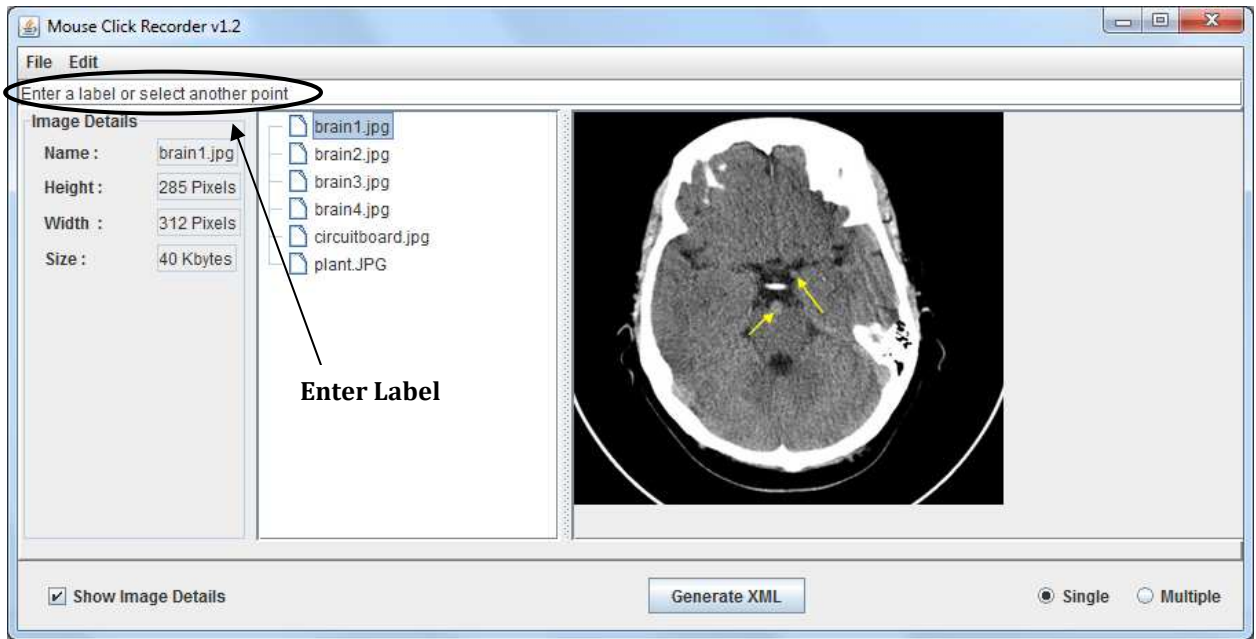
Select a picture. Doing so would cause the image to show up in the right hand side of the MouseClickWindow. Let's select **brain1.jpg** as shown below:



6. Record a point.

In order for MCR to save the coordinates, **click** on any region within the picture then **enter a label** in the text-box. Finally, **press enter** to save the label. The MCR will save the clicked coordinate in a txt file.

Note: In order for MCR to save the coordinates with the label, always remember to click, enter a label, then press ENTER.



7. Single click vs. Multiple click.

a. Record a point with a label.

Single click: Click on the **Single** option. Click a point in the picture, enter a label in the textbox, then press enter to save the label.

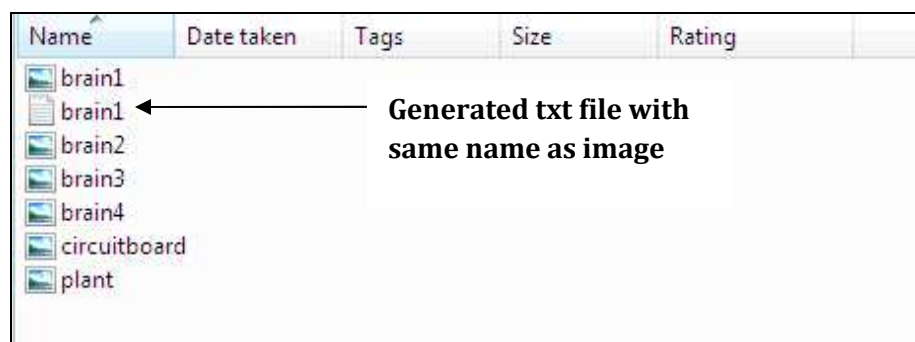
b. Record multiple points with same label.

Multiple click: Click on the **Multiple** option. Enter a label in the textbox, press enter to save the label, click on multiple points in the picture. MCR will store all of these coordinates under the same label you have entered. The coordinate recording function will be disabled when another label is entered or the **Single** option is selected.

8. Generated output file.

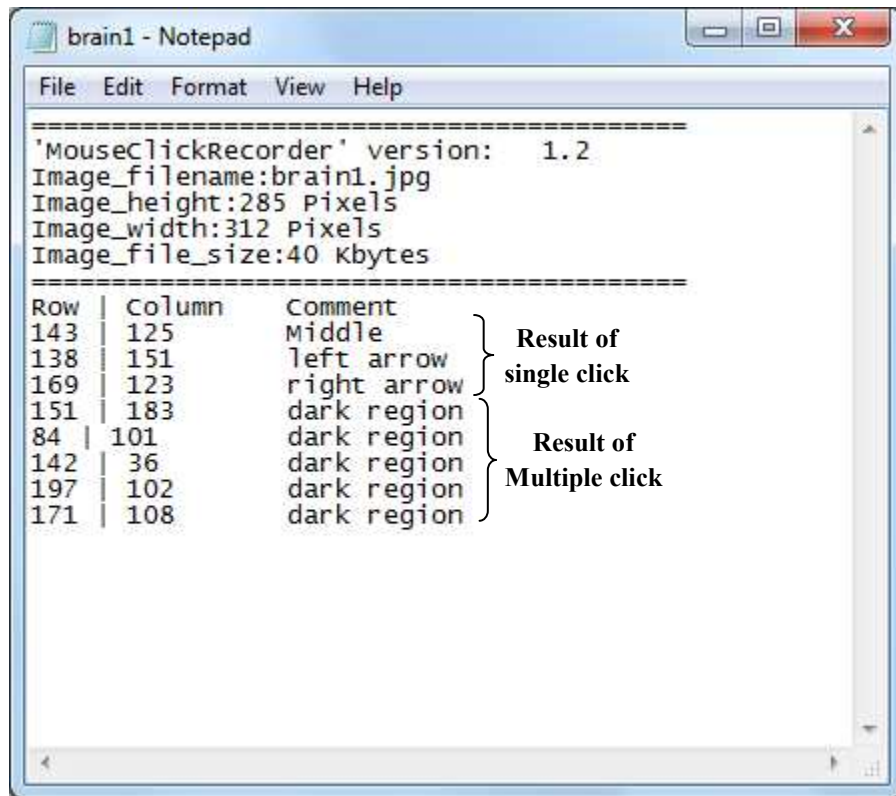
Open up the folder directory on your computer that contains the image you previously clicked on. A corresponding text file with the same name as your image should appear in the same directory.

i.e. If the file is named 'brain1.jpg', an output file named 'brain1.txt' will be generated.



9. Output file.

Open the output file to see the list of coordinates and the labels associated with the clicked coordinates.



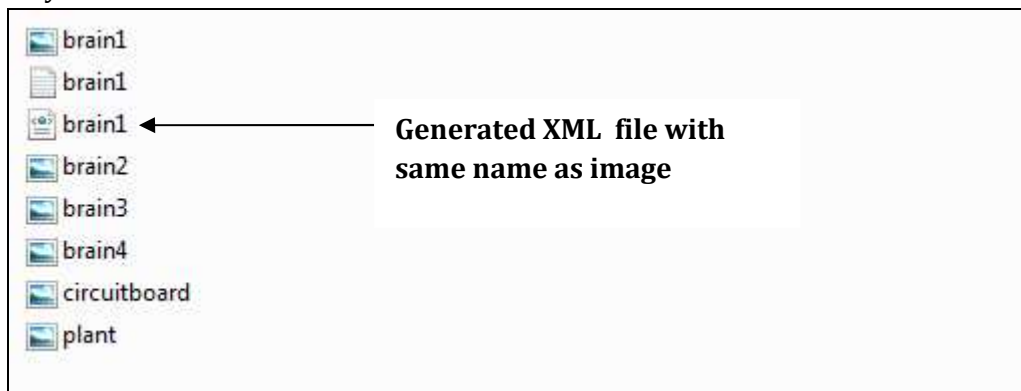
```
brain1 - Notepad
File Edit Format View Help
=====
'MouseClickRecorder' version: 1.2
Image_filename:brain1.jpg
Image_height:285 Pixels
Image_width:312 Pixels
Image_file_size:40 Kbytes
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Row | Column | Comment
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169 | 123 | right arrow
151 | 183 | dark region
84 | 101 | dark region
142 | 36 | dark region
197 | 102 | dark region
171 | 108 | dark region
=====
```

Result of single click

Result of Multiple click

10. Generate XML.

MCR also has an option where you can generate an XML output based on the file output. Just click the 'Generate XML' button at the bottom of the interface and a corresponding xml file with the same name as your image should appear in the same directory.



Contact

If you have questions or feedback please contact:

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