**Instruction**

**Overview**

Particle Filter Simulator is an interactive software that realises the data visualisation of Particle Filter algorithm.

**Functions**

1. Basic function

* There are four parameters’ “number line” provided for users to adjust under the button "Start".
* Users could drag them as their like to adjust the settings.
* When they finish adjusting, they can click the button "Start" to generate the image
* The software will process the picture using the parameters given by the user.
* When users click the “Start” button, the software will operate and replace the old image with a new one regardless of whether the user has changed the parameters or not.
* It's worth noting that when users open the software, it will automatically generate an image based on the default data set by the developer.
* Due to the specificity of the algorithm, the image generated by same parameters may be entirely different.

1. I/O function

* The software provides the service to import and export data. Users can click the “File” to find them at the upper left corner of the user interface.
* When users finish importing data, they should click the button "Refresh" to generate a new image from the original one.
* Users can also use the export function to get the data of the current image and parameters.
* Both import data and export data are constituted by coordinate parameters and data.

1. Advanced function

* Users can do multiple operations on one image with buttons on top of it.
* Zoom bars are provided at the bottom and the right of the image for users to view some parts of the picture they want to see.
* Region zoom function is designed for users to zoom the areas they concentrate on more efficiently. They can drag the mouse to select the region they want to observe in the image.
* Reduction of region zoom is a function which could restore the image changed by user's region zoom operation. Users can click "Reduction of region" to use this function. It can only restore the graphical change caused by region zoom and only one step at a time. (This means that it does not include the graphics changes caused by the zoom bar.)
* Click the button "restore" to restore the image. It could restore the image to its initial graphics state. (Changes caused by the scaling bars will also be restored)
* Click the button "data view" to view the data of the image. (Including X-chart and X-true)
* Click the button “Save as figure" to save and export the image. (The default format is PNG)

1. More details

* Users can check the option "Always on Top" in "view" to keep the software interface on the top.
* Users can hover the cursor over the coordinates of the image at any time, and it would appear the data of the current point.

The above is the instructions of the software.

Thank you for reading!