PHANTOM PYTHON PROGRAM

OBJECTIVE

To allow Phantom camera users to create custom Python programs using pyphantom. This adapter allows the user to perform basic functions, such as reading pixel values from different file types, retrieving a live view of an image or extracting metadata from Cine files. A full list is found in What Can You Do with Phantom Python Adapter?

CUSTOMER REQUIREMENTS

Pyphantom has been tested in the following environment and it's recommended that your configuration is the same.

- Windows Version 10, 64 bit
- Python version 3.11 (using NumPy, matplotlib, Pillow libraries)
- Phantom SDK version 3.8.804.6

GETTING STARTED

There are two (2) programs to run. Code examples and wheel package file are provided with the SDK installer into the directory of your choice.

FOR PHANTOM SDK:

To install, run SDK_3.8.804.6_Setup.exe

FOR PYPHANTOM:

To install, run 'pip install <path to pyphantom whl file>'

WHAT CAN YOU DO WITH PYPHANTOM?

There are many methods available for use, all contained in All_Methods_And_Properties.py. Eight (8) basic code examples are included. These code examples are intended to demonstrate how to perform common tasks. Code examples are provided for each item below.

1. Get a live view of an image of what camera is seeing — Live_Image_Viewer
2. Import and read pixel values of Tiff files — Tiffstack_To_Matrix.py
3. Import and read pixel values from Cine files — Cine_Pixel_Values.py
4. Extract metadata from a Cine File (i.e., timestamp, fps, etc) — Extract_Cine_Metadata.py

5. Use a script with Get and Set commands to retrieve camera properties: {Exposure time, FPS, Resolution, EDR, Lens Control. Quiet Mode, Capture Mode} Getting_and Setting_Camera.py
6. Simple control GUI to: GUI_Updated.py
    a. Enter Capture Mode
    b. Set basic parameters (exp, fps, trig position, etc)
7. Discover cameras, connect, set/get params and close Camera_Selector_Fn.py
8. Connect, rec, trig, get cine status, close Connect_Record_Save.py
9. Download, display and analyze frames from camera, from PC Extract_Cine_Metadata.py
10. Download and analyze/display timestamps from camera Tiffstack_To_Matrix.py

CODE EXAMPLES

The installer has code examples that will install in default directory ..\Documents\Phantom folder unless you specify otherwise.

LIVE_IMAGE_VIEWER.PY

Shows a live image for a connected camera, or a simulated camera if none connected

ALL_METHODS_AND_PROPERTIES.PY

Repository of all the methods and properties available in pyphantom.

CAMERA_SELECTOR_FN.PY

Returns a camera object in any case of cameras connected.

CINE_PIXEL_VALUES.PY

Allows you to specify and look at specific pixel values from a Cine.

CONNECT_RECORD_SAVE.PY

Demonstrates how to connect to a camera, make a recording and save it in multiple formats

EXTRACT_CINE_METADATA.PY

Demonstrates how to get metadata from a Cine using Cine Get properties, including readable timestamps.

GETTING_AND SETTING_CAMERA.PY

Allows you to connect to a camera, and then get and set parameters. Parameters are partition count, resolution, frame rate, exposure, quiet mode, capture mode (not exhaustive list)

GUI_UPDATED.PY

- Takes a mono Cine file and converts to a matrix. This takes a mono cine file and turns it into a matrix[image#][height][width]
- It then displays it with a simple gui that lets you go left or right to change the image, or space/esc to close it
- It will also display the (x,y) coordinates of a pixel you put your mouse over, and that pixel's value.
- You can also press p to look at a specific pixel's value, or press c to change a specific pixel's value

TIFFSTACK_TO_MATRIX.PY

This takes a folder with a tiffstack in it, and creates a matrix[image#][height][width][rgb] with all the .tif files in the folder

KNOWN ISSUES

No known issues.