

ProCam calibration program by Asayama

This tool can calculate intrinsic and extrinsic parameter of camera and projector

- Requirement

Camera, Projector, Checkerboard printed yellow color (figure 1), Things which can fix checkerboard

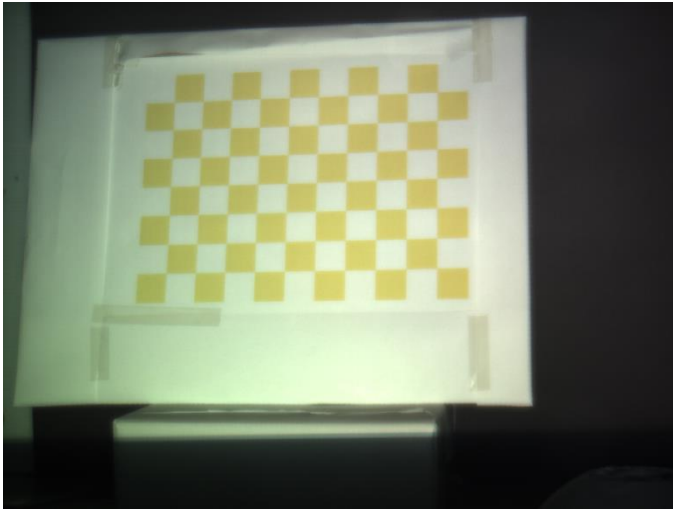


Figure 1. Checkerboard printed yellow color

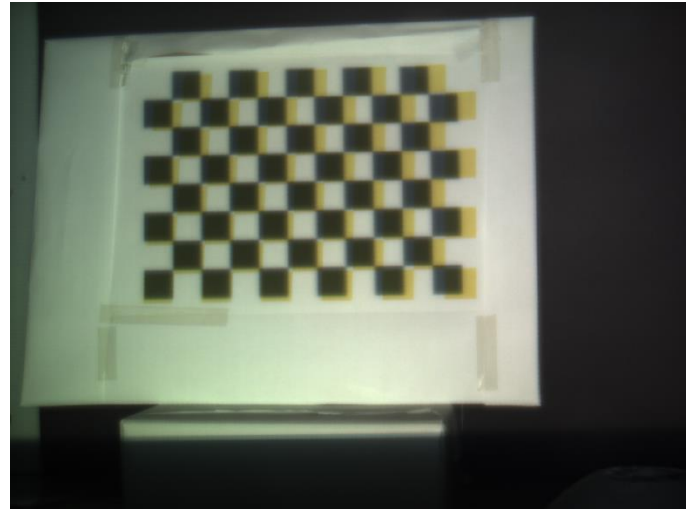


Figure 2. Calibration scene

- Procedure

1. **Setup OpenCV (Add compiler include paths and linker library paths of OpenCV)**

“Opencv_lib.hpp” is header file to link library paths. I put this header file in same direction with this manual. You can use this if you need.

2. **Setup camera library**

You should change “Camera_Class.h” according to your camera.

If you use webcam, you can use “Camera_Class (for webCam).h”.

3. **Run a program**

4. **Put the checkerboard where camera can capture all checker pattern.**

5. **Adjust the projected checker pattern onto the board.**

Use keyboard: Translation ‘a’, ‘w’, ‘s’, ‘d’. Scale change ‘z’, ‘x’.

6. **Put ‘c’ for capture**

Wait for about 1 second. We capture image with projection and without projection.

7. **Iterate 4~6**

As the same with camera calibration, you need to put board various point.

More than 20 captured images may be required.

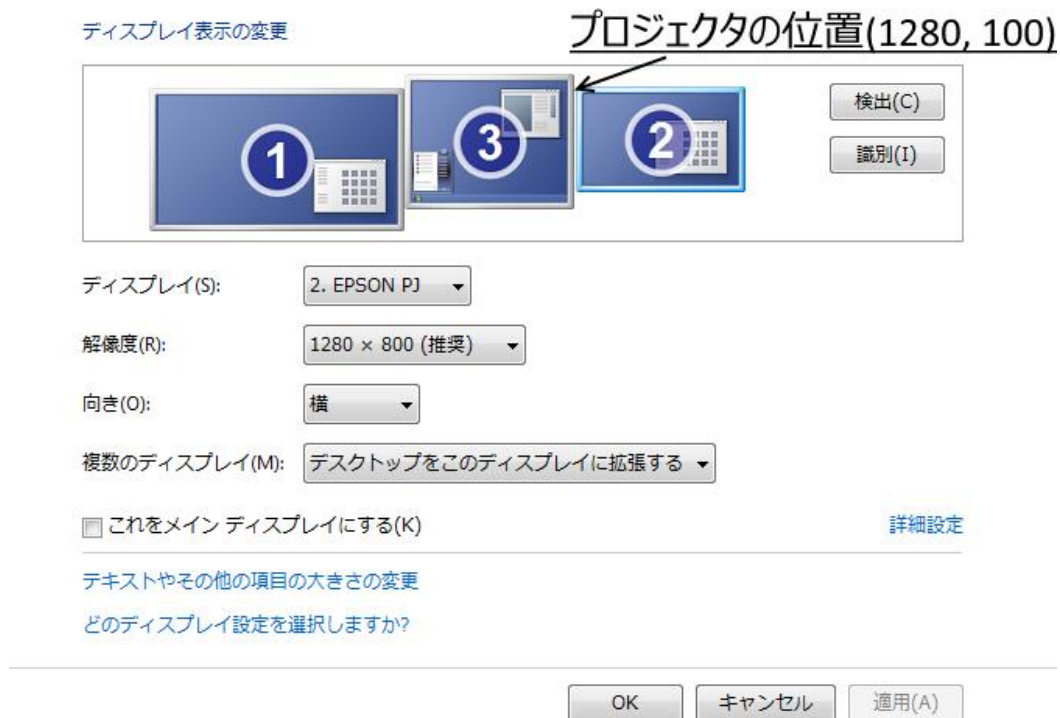
8. **Put ‘q’ for calculation**

- Variable in source code

You can change the projector's resolution and window position in “main.h”.

“init_window_pos” is the left up point in projector window.

Put the projector window in (init_window_posx, init_window_posy) in Display Setting



“checkSize” is a side length of checker square.

“checkPoint” is a square number.

For example, in figure 1 (x=7, y=10)

In Main.cpp

If you calculate intrinsic parameter of camera previously, you can define PRE_CALIBRATION

If you want to use previous captured image, you adjust the variable “imgNum” and put ‘q’ without capturing new image.

You should adjust the variable “ix” and “iy” so that the frame of window is not projected.