% Intrinsic and Extrinsic Camera Parameters

%

% This script file can be directly excecuted under Matlab to recover the camera intrinsic and extrinsic parameters.

% IMPORTANT: This file contains neither the structure of the calibration objects nor the image coordinates of the calibration points.

% All those complementary variables are saved in the complete matlab data file Calib\_Results.mat.

% For more information regarding the calibration model visit http://www.vision.caltech.edu/bouguetj/calib\_doc/

%-- Focal length:

fc = [ 550.307202370897240 ; 548.427979065932850 ];

%-- Principal point:

cc = [ 325.009050692525650 ; 255.963736813278590 ];

%-- Skew coefficient:

alpha\_c = 0.000000000000000;

%-- Distortion coefficients:

kc = [ 0.198605423329255 ; -0.459285830195762 ; -0.008656507034746 ; 0.001113169340110 ; 0.000000000000000 ];

%-- Focal length uncertainty:

fc\_error = [ 11.074328536808748 ; 10.501740652607038 ];

%-- Principal point uncertainty:

cc\_error = [ 6.741535814727462 ; 5.802104975751933 ];

%-- Skew coefficient uncertainty:

alpha\_c\_error = 0.000000000000000;

%-- Distortion coefficients uncertainty:

kc\_error = [ 0.032151275728607 ; 0.092956012515140 ; 0.004126400266151 ; 0.005434975943229 ; 0.000000000000000 ];

%-- Image size:

nx = 640;

ny = 480;

%-- Various other variables (may be ignored if you do not use the Matlab Calibration Toolbox):

%-- Those variables are used to control which intrinsic parameters should be optimized

n\_ima = 34; % Number of calibration images

est\_fc = [ 1 ; 1 ]; % Estimation indicator of the two focal variables

est\_aspect\_ratio = 1; % Estimation indicator of the aspect ratio fc(2)/fc(1)

center\_optim = 1; % Estimation indicator of the principal point

est\_alpha = 0; % Estimation indicator of the skew coefficient

est\_dist = [ 1 ; 1 ; 1 ; 1 ; 0 ]; % Estimation indicator of the distortion coefficients

%-- Extrinsic parameters:

%-- The rotation (omc\_kk) and the translation (Tc\_kk) vectors for every calibration image and their uncertainties

Focal Length: fc = [ 944.14875 895.97822 ] ± [ 2.92487 2.81461 ]

Principal point: cc = [ 514.15808 380.01656 ] ± [ 3.58084 3.99883 ]

Skew: alpha\_c = [ 0.00000 ] ± [ 0.00000 ] => angle of pixel axes = 90.00000 ± 0.00000 degrees

Distortion: kc = [ -0.12135 0.34526 -0.00120 -0.00038 0.00000 ] ± [ 0.01166 0.04914 0.00139 0.00125 0.00000 ]

Pixel error: err = [ 0.45779 0.46441 ]

Focal Length: fc = [ 944.93604 896.29362 ] ± [ 3.30435 3.17770 ]

Principal point: cc = [ 514.43775 376.24161 ] ± [ 4.04813 4.56828 ]

Skew: alpha\_c = [ 0.00000 ] ± [ 0.00000 ] => angle of pixel axes = 90.00000 ± 0.00000 degrees

Distortion: kc = [ -0.11740 0.33334 -0.00222 -0.00007 0.00000 ] ± [ 0.01311 0.05507 0.00158 0.00141 0.00000 ]

Pixel error: err = [ 0.56907 0.46819 ]