NTUST course: Computer Vision and Applications (CI5336701, 2017 Spring)

FinalP roject：Reconstruct 3D from stereoscopic images

Date Due：2017. Jun. 24th, PM11:55。

Description：

1-1. Write a program for reconstructing 3D points from two images, then, output a .xyz file. (choose your tools, ex. C++/C, openCV, Matlab).
撰寫程式將立體照片內容計算出 3D 資料。並匯出成.xyz 檔案。

1-2. The intrinsic and extrinsic parameters of both images are given in CalibrationData.txt. In this project, you need to write a program for importing both image sequences, and analyzing the both synchronized images. A fundamental matrix is given for assisting you to find the corresponding features in left and right images. Once corresponding features are determined, please calculate their 3D, then store them as a .xyz. Please reject all outliers by verifying their reprojection error.
兩組同步照片的內外部參數以提供如 CalibrationData.txt。本專案中你需寫程式匯入圖檔，並分析左右影像中的亮點，同時您可以利用 fundamental matrix 可找出兩張照片間的對應點關係。並將這些對應點的 3D 座標計算出來，儲存為.xyz 檔。請利用投影誤差將錯誤的 3D 點排除。

1-3. Please write a short report (upto 3 pages, A4), and use Meshlab or other 3D viewer to verify your result.
請撰寫一份簡易報告(上限 3 頁 A4)，簡易說明製作內容。建議使用 3D 看圖軟體軟體如 meshlab 檢驗您所製作的 3D 點是否正確。

1-4. Deliverable: There are three types of data you should provide: 1) Source code in C++/C or Matlab, with simple comment. 2) Execution file (.exe). 3) description document. Please zip all your files, then, upload on Moodle (http://moodle.ntust.edu.tw/) by due 6/24 PM11:55.
請繳交 3 種檔案 1)程式原始檔，並在內文加簡易註解，2)執行檔，3) 3 頁以內的簡易報告敘述製作(以 ppt, doc 或 pdf 儲存皆可)。請將所檔案壓縮，並在期限內(6/24 PM11:55)上傳到 Moodle。

Hint:

1. Please refer to course slides.
2. The 3D model is roughly 130 mm in height.

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