NTUST course: Computer Vision and Applications (CI5336701, 2024 Spring)

Homework#1：Draw 3D trajectory of on images

Date Due：2024. Mar. 19, PM11:59。 (~2 weeks)

Description：

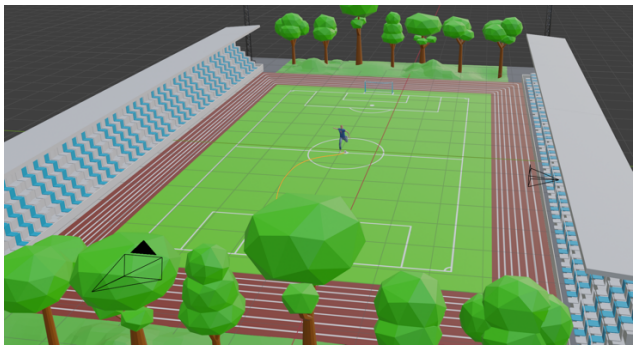
1. Writing programs for reading images, then drawing projected points on every image. A list of 3D points is given in a text file named 3D_Trajectory.xyz, each line indicates one 3D point. And two image snapshots in virtual environment with known camera parameters (as one CameraParameter.txt file) are provided.
2. Your program should have the following features:
   1) Able to read given images, and read the text file (3D_Trajectory.xyz)
   2) Do matrix multiplication (ex. $\mathbf{x}=\mathbf{K}[\mathbf{R}|\mathbf{T}]\mathbf{X}$)
   3) Draw projected 2D points (and connect as a line strip) on this image.
   4) Save the image as you_student_id.jpg (ex. M11225301_1.jpg and M11225301_2.jpg).

3. There are at least two types of data you should upload to https://moodle2.ntust.edu.tw by date due
   1) Source code in C++/C, Matlab, python, with simple comment.
   2) Execution file (.exe, if appliable).
   3) Result image2 (correct 3D trajectory on given images)

   No need to write a report.

Hint: Overall layout of cameras and virtual 3D environment. Imagine what photo contents you should have.

Virtual 3D environment for reference:



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