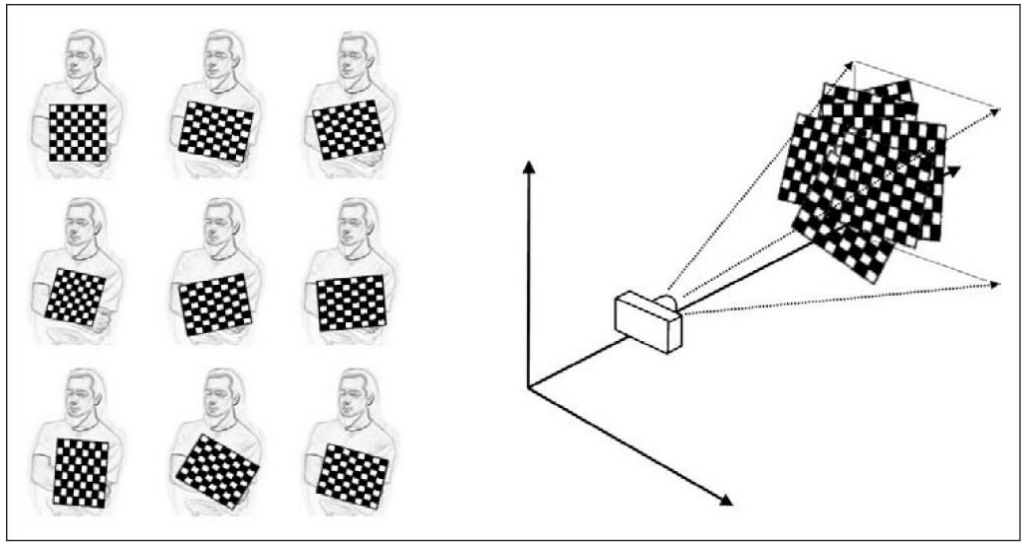
Homework 1

Assignment

- In this assignment, you will practice how to implement camera calibration.
- For implement details, please refer to the slides *02-camera p.76-80.*
- We will provide an example code, you need to revise it by your calibration function.
- DO NOT use the cv2.calibrateCamera or other calibration functions, you need to implement it from scratch.



Assignment

- In example code (camera_calibration.py), the code of loading data is provided.
  - ✔ command: python camera_calibration.py
- Camera calibration:
  - ✔ First, figure out the Hi of each images.
  - ✔ Use Hi to find B, and calculate intrinsic matrix K from B by using Cholesky factorization.
  - ✔ Then, get extrinsic matrix [R|t] for each images by K and H (p.79, 80).
- After you find out the intrinsic matrix and extrinsic matrixes, plot it like p.86 result.
  - ✔ plot code is given, you only need to feed the data in.
- For mathematic details, please refer to slides *02-camera p.76-80*.

Assignment

- Two types of data you should try:

✔ images we provided in data folder

✔ images captured by your smartphone

- We have provided the chessboard image, print it out and take photo with it.
- NOTICE that you should close the AF(auto focus) function of your camera, and set a fix focus.
- If you don’t know how to fix focus of your camera, please google it or ask TAs.

Assignment

- Deadline: 2024/10/12 12:00:00 am
- Hand in your Group[1]_HW[1]_report.pdf and Group[1]_HW[1]_code.zip on New E3. (Please replace the numbers in [ ])
- The report should include:
  - ✔ your introduction
  - ✔ implementation procedure
  - ✔ experimental result (of course you should also try your own images)
  - ✔ discussion
  - ✔ conclusion
  - ✔ work assignment plan between team members.
- If you have any problems, please email to TAs.