2021.09.14 유지훈

|  |
| --- |
| 1번 : 코드 |
| import glob, cv2, pickle  import numpy as np  def undistort\_img(cal\_img, cal, result):  obj\_pts = np.zeros((6 \* 9, 3), np.float32)  obj\_pts[:, :2] = np.mgrid[0:9, 0:6].T.reshape(-1, 2)  objpoints = []  imgpoints = []  images = glob.glob(f'{cal\_img}/\*.jpg')  total\_images = len(images)  for indx, fname in enumerate(images):  img = cv2.imread(fname)  gray = cv2.cvtColor(img, cv2.COLOR\_BGR2GRAY)  ret, corners = cv2.findChessboardCorners(gray, (9, 6), None)  if ret == True:  objpoints.append(obj\_pts)  imgpoints.append(corners)  cv2.drawChessboardCorners(img, (9, 6), corners, ret)  write\_name = f'{cal}/corners\_found' + str(indx) + '.jpg'  cv2.imwrite(write\_name, img)  out\_str = f'{indx}/{total\_images}'  cv2.putText(img, out\_str, (10, 25), cv2.FONT\_HERSHEY\_SIMPLEX, 0.4, (0, 255, 255), 1)  img = cv2.pyrDown(img)  cv2.imshow('img', img)  cv2.waitKey(500)  cv2.waitKey(500)  cv2.destroyAllWindows()  img\_size = (img.shape[1], img.shape[0])  ret, mtx, dist, rvecs, tvecs = cv2.calibrateCamera(objpoints, imgpoints, img\_size, None, None)  dist\_pickle = {}  dist\_pickle['mtx'] = mtx  dist\_pickle['dist'] = dist  pickle.dump(dist\_pickle, open(f'{result}/cal\_pickle.p', 'wb'))  def Undistort(img, url = 'black\_box/wide\_dist\_pickle.p'):  with open(url, mode='rb') as f:  file = pickle.load(f)  mtx = file['mtx']  print('mtx', mtx)  dist = file['dist']  print('dist', dist)  return cv2.undistort(img, mtx, dist, None, mtx)  if \_\_name\_\_ == '\_\_main\_\_':  undistort\_img('img', 'conser', 'result')  img = cv2.imread('img/9.jpg')  cal = Undistort(img, 'result/cal\_pickle.p')  show = cv2.hconcat([img, cal])  show = cv2.pyrDown(show)  cv2.imshow("show", show)  cv2.imwrite('result/orginal.jpg', img)  cv2.imwrite('result/calibration.jpg', cal)  cv2.imwrite('result/result\_cal.jpg', show)  cv2.waitKey(0)  cv2.destroyAllWindows() |

|  |
| --- |
| 2번 캘리브레이션 된 영상 10장(체크보드 에지 찾은영상) |
|  |

|  |
| --- |
| 3번 : 캘리브레이션 파라미터 |
| mtx : [[2.67439989e+03 0.00000000e+00 4.15951586e+02],  [0.00000000e+00 2.40464745e+03 3.92355457e+02],  [0.00000000e+00 0.00000000e+00 1.00000000e+00]]  dist : [[-0.43994476, 1.75810127, -0.01790484, 0.03322893, -5.27698171]] |

|  |
| --- |
| 4번 캘리브레이션 원본영상 – 결과영상 |
|  |