TUGAS PEMROSESAN PARALEL
IMAGE STITCHING DENGAN PROGRAM PYTHON

Disusun untuk memenuhi tugas Mata Kuliah Pemrosesan Paralel

Disusun Oleh:

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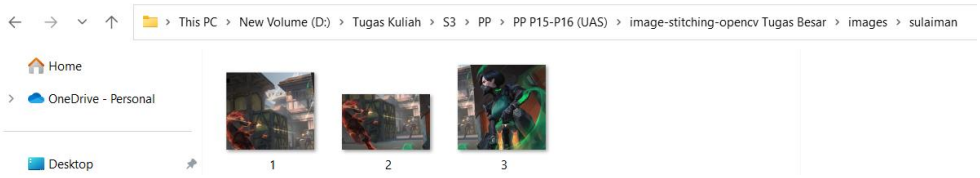
Hal yang perlu dipersiapkan

1. CMD (Python Included)
2. Coding Stitching
3. Gambar Input

Konfigurasi Python & Library yang diperlukan

1. Sebelum memulai, pastikan terlebih dahulu gambaran input dan coding untuk melakukan stitching telah tersedia.




```python
# USAGE
# python image_stitching_simple.py --images images/scottsdale --output output.png

# import the necessary packages
from imutils import paths
import numpy as np
import argparse
import imutils
import cv2

# construct the argument parser and parse the arguments
ap = argparse.ArgumentParser()
ap.add_argument("-i", "--images", type=str, required=True,
    help="path to input directory of images to stitch")
ap.add_argument("-o", "--output", type=str, required=True,
    help="path to the output image")
args = vars(ap.parse_args())

# grab the paths to the input images and initialize our images list
print("[INFO] loading images...")
imagePaths = sorted(list(paths.list_images(args["images"])))
images = []

# loop over the image paths, load each one, and add them to our
# images to stich list
for imagePath in imagePaths:
    image = cv2.imread(imagePath)
    images.append(image)


# initialize OpenCV's image stitcher object and then perform the image
# stitching
print("[INFO] stitching images...")

# Create a Stitcher with a default ORB (feature-based) detector
stitcher = cv2.Stitcher_create(cv2.Stitcher_SCANS)

# Detect keypoints and set camera parameters manually
status, stitched = stitcher.stitch(images)
if status != cv2.Stitcher_OK:
    print("[INFO] Camera parameters adjustment failed. Retrying with manual adjustment...")

    # Manually set camera parameters
    stitcher.setWarper(cv2.detail_WaveCorrectKind_HORIZ)
    stitcher.setWaveCorrection(True)
    stitcher.setFeaturesFinder(cv2.Stitcher_createFeaturesFinder())

    # Retry stitching
    status, stitched = stitcher.stitch(images)
```

```
# print additional information
print("[INFO] Stitching Status:", status)

# if the status is '0', then OpenCV successfully performed image
# stitching
if status == cv2.Stitcher_OK:
    # write the output stitched image to disk
    cv2.imwrite(args["output"], stitched)

    # display the output stitched image to our screen
    cv2.imshow("Stitched", stitched)
    cv2.waitKey(0)

# otherwise, the stitching failed
else:
    print("[INFO] image stitching failed ({})".format(status))

    # print additional information
    if status == cv2.Stitcher_ERR_NEED_MORE_IMGS:
        print("[INFO] Need more images for stitching.")
    elif status == cv2.Stitcher_ERR_HOMOGRAPHY_EST_FAIL:
        print("[INFO] Homography estimation failed.")
    elif status == cv2.Stitcher_ERR_CAMERA_PARAMS_ADJUST_FAIL:
        print("[INFO] Camera parameters adjustment failed.")
    elif status == cv2.Stitcher_ERR_MATCH_CONFIDENCE_FAIL:
        print("[INFO] Match confidence test failed.")
    elif status == cv2.Stitcher_ERR_CAMERA_PARAMS_VERIFY_FAIL:
        print("[INFO] Camera parameters verification failed.")

# ... (existing code)
```

2. Pertama-tama, pastikan CMD pada Windows telah terinstall python dan pip.

```
C:\WINDOWS\system32\cmd.exe
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>python -V
Python 3.10.7

C:\Users\user>pip -V
pip 23.3.1 from C:\Users\user\AppData\Local\Programs\Python\Python310\lib\site-packages\pip
(python 3.10)
```

3. Kemudian, lakukan instalasi numpy, imutils, dan cv2, hingga muncul seperti gambar dibawah ini.

```
C:\Users\user>pip install numpy
Requirement already satisfied: numpy in c:\users\user\appdata\local\programs\python\python31
0\lib\site-packages (1.26.1)

C:\Users\user>pip install imutils
Requirement already satisfied: imutils in c:\users\user\appdata\local\programs\python\python
310\lib\site-packages (0.5.4)

C:\Users\user>pip install opencv-python
Requirement already satisfied: opencv-python in c:\users\user\appdata\local\programs\python\
python310\lib\site-packages (4.8.1.78)
Requirement already satisfied: numpy>=1.21.2 in c:\users\user\appdata\local\programs\python\
python310\lib\site-packages (from opencv-python) (1.26.1)
```

Menjalankan Program Stitching pada CMD

1. Pertama-tama, pindah direktori terlebih dahulu ke direktori file program image stitching yang akan dieksekusi.

```
C:\Users\user>D:

D:\>cd D:\Tugas Kuliah\S3\PP\PP P15-P16 (UAS)\image-stitching-opencv Tugas Besar
```

2. Kemudian jalankan program Image Stitching dengan command berikut.
(Untuk image, gunakan path menuju file image yang akan di stitch)

```
D:\Tugas Kuliah\S3\PP\PP P15-P16 (UAS)\image-stitching-opencv Tugas Besar>python image_stitc
hing_simple.py --images images/sulaiman --output output.png
[INFO] loading images...
[INFO] stitching images...
[INFO] Stitching Status: 0
```

3. Jika program tersebut berhasil di jalankan, maka akan keluar output sebagai berikut dengan hasil stitch bernama “output.png” di folder yang sama dengan programnya.