Visual Computing Assignment 1

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Content

[1. Task: Dataset and Capture 1](#_Toc209647374)

[2. Task: Feature Detection and Matching 1](#_Toc209647375)

## Task: Dataset and Capture

The Images can be found on the GitHub repository ([Link to Repository](https://github.com/Kornimate/visual-computing-au)). The following details were observed about these pictures:

|  |  |  |  |
| --- | --- | --- | --- |
| Source Name | Pictures with \*-s1-\* | Pictures with \*-s2-\* | Pictures with \*-s3-\* |
| Title | Outdoor Set 1 | Indoor Set 2 | Outdoor Set 3 |
| Short Description | Outdoor picture set which contains trees and bushes with a house in the background | Indoor picture set which contains a corridor and stairs with mailboxes and a door | Outdoor picture set which contains a street with trees and houses and some parked cars |
| Lighting | Good Lighting | Poor Lighting | Good Lighting |
| Motion Blur | Sharp Image | Sharp Image | Sharp Image |
| Texture Richness | High Texture richness | Lower Texture Richness | High Texture Richness |

## Task: Feature Detection and Matching

These pieces of information were also logged to the console in the C++ program: (The images were scaled to 15% of their original size on both axes for better runtime and better viewability of matches on my device)

|  |  |  |
| --- | --- | --- |
| Image | outdoor-s1-1.jpg | outdoor-s1-2.jpg |
| Key points using SIFT | 1652 | 1623 |
| Matching time using SIFT | 523.291 ms | |
| Key points using AKAZE | 1025 | 929 |
| Matching time using AKAZE | 35.3661 ms | |

### Task: Homography Estimation Experiments

These pieces of information were also logged to the console in the C++ program: (The images were scaled to 15% of their original size on both axes for better runtime and better viewability of matches on my device) Images used for the experiments: **outdoor-s3-2.jpg** and **outdoor-s3-3.jpg**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Threshold = 1 | Threshold = 3 | Threshold = 5 | Threshold = 10 |
| Inliers | 17 | 69 | 91 | 100 |
| Visual Quality | Good | Good | Good | Good |
| Runtime | 191.69 ms | 172.254 ms | 177.881 ms | 177.737 ms |