**Lab #3**

Tasks 1:

|  |  |
| --- | --- |
| bY | -1.422 mm |
| bZ | -1.287 mm |
| ω | -0.978 (deg) |
| ϕ | 0.271 (deg) |
| κ | -1.73 (deg) |

Task 2:

I compared the old bY value to the new updated value. If the absolute value of the difference is less than 1e-3, we stop iterating. With this set of data, we had **3 iterations** until convergence.

Task 3:

|  |  |  |  |
| --- | --- | --- | --- |
| **Model Space Coordinates Left Image** | | | |
| **ID** | **X** | **Y** | **Z** |
| **100** | -9.44857 | 96.28208 | -153.432 |
| **101** | 84.64723 | 103.2646 | -152.662 |
| **102** | -2.29214 | -5.93561 | -151.647 |
| **103** | 101.2009 | -0.39676 | -146.484 |
| **104** | 18.37027 | -79.4476 | -148.91 |
| **105** | 87.39028 | -88.1248 | -148.434 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Model Space Coordinates Right Image** | | | |
| **ID** | **X** | **Y** | **Z** |
| **100** | -9.44857 | 96.28208 | -153.432 |
| **101** | 84.64723 | 103.2646 | -152.662 |
| **102** | -2.29214 | -5.93561 | -151.647 |
| **103** | 101.2009 | -0.39676 | -146.484 |
| **104** | 18.37027 | -79.4476 | -148.91 |
| **105** | 87.39028 | -88.1248 | -148.434 |

Task 4:

|  |  |
| --- | --- |
| **Y-Parallax Values** | |
| **ID** | **yP** |
| **100** | -0.00306342 |
| **101** | 0.00246507 |
| **102** | 0.00675524 |
| **103** | -0.00454745 |
| **104** | -0.00546028 |
| **105** | 0.0040972 |

Image ID 102 with a yP value of 0.00675524 may be an outlier since it is more than twice that of the lowest value from Image ID 101. Image ID 104 may also be an outlier since it is also more than twice of Image ID 101 on the negative side.

Task 5:

Chart, bar chart, histogram

Description automatically generated

The transformed right images plays a role in the change of scale factor since the transformed right image coordinates needs the rotation matrix. The rotation matrix changes every rotation because of the new angles from each iteration.

Task 6:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Correlation Coefficient Matrix | | | | |
| 1 | 0.99997 | 0.99972 | -0.99902 | 0.999852 |
| 0.99997 | 1 | 0.999507 | -0.99865 | 0.99969 |
| 0.99972 | 0.999507 | 1 | -0.99979 | 0.999979 |
| -0.99902 | -0.99865 | -0.99979 | 1 | -0.99964 |
| 0.999852 | 0.99969 | 0.999979 | -0.99964 | 1 |