Inter-vehicle Distance Estimation Using Displaced Stereo Vision

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Keywords – Stereoscopic vision, Robot Operating System, Unmanned Aerial Vehicle, Unmanned Ground Vehicle

I. INTRODUCTION

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1. Second-Order Heading

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Overall, 4 pages max.

iI. problem description

iII. SySTEM DESCRIPTION

iv. methodology

A. Object Detection

B. Direction Calculation

C. Distance Calculation - Closest Points

For purposes of distance estimation, the point of interest on the target object is the point closest to the wafflebot. To calculate this point of interest, we calculate the lines from both observers to the target object. These, and are the lines in 3D space from the quadcopter to the target and the wafflebot to the target, respectively:

A picture containing text, way, light, sidewalk

Description automatically generated

Fig. 1. Figure Caption

|  |  |
| --- | --- |
| , | (1), (2) |

and are the location of the quadcopter and wafflebot in reference to the world frame. These locations can be obtained from the onboard sensors on these observers. and are unit vectors from the quadcopter to target and wafflebot to target, respectively. These were obtained from direction calculation:

|  |  |
| --- | --- |
| , | (3),(4) |
|  | (5),(6) |

D. Distance Calculation - Sine Law

iv. TESTING AND RESULTS

V. DISCUSSION

VI. CONCLUSION

Table 1. IEEE Table Caption

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|  | Your table |  |
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REFERENCES

1. Reference in IEEE Transactions form.
2. Reference in IEEE Transactions form.
3. Reference in IEEE Transactions form.