REFERENCES

1. J. A. A. S. Somasiri, K. G. B. Gamagedara, D. H. S. Maithripala and J. M. Berg, "Implementation of an almost globally stable intrinsic nonlinear PID controller for attitude stabilization of a quadrotor," 2015 IEEE 10th International Conference on Industrial and Information Systems (ICIIS), Peradeniya, 2015, pp. 425-428.

2. Maithripala, D. H. S., and Berg, J. M., 2014. "An Intrinsic Robust PID Controller on Lie Groups". Automatica, pp. 5606–5611 (2015).

3. Silvere Bonnabel, Philippe Martin, Erwan Salaun. Invariant Extended Kalman Filter: theory and application to a velocity-aided attitude estimation problem. 48th IEEE Conference on Decision and Control, Dec 2009, Shanghai, China. pp.1297-1304, 2009,

4. D. H. S. Maithripala, W. P. Dayawansa, and J. M. BERG, "Intrinsic observer-based stabilization for simple mechanical systems on Lie groups," SIAM J. Control and Optim., vol. 44, pp. 1691–1711, 2005.

5. R. Mahony, Tarek Hamel, Jean-Michel Pflimlin. Nonlinear Complementary Filters on the Special Orthogonal Group. IEEE Transactions on Automatic Control, Institute of Electrical and Electronics Engineers, 2008, 53 (5), pp.1203-1217.

6. S. O. H. Madgwick, A. J. L. Harrison and R. Vaidyanathan, "Estimation of IMU and MARG orientation using a gradient descent algorithm," 2011 IEEE International Conference on Rehabilitation Robotics, Zurich, 2011, pp. 1-7.

7. Sabatini, Angelo. (2011). Kalman-Filter-Based Orientation Determination Using Inertial/Magnetic Sensors: Observability Analysis and Performance Evaluation. Sensors (Basel, Switzerland). 11. 9182-206. 10.3390/s111009182.

8. Madinehi, Nojan, "Rigid Body Attitude Estimation: An Overview and Comparative Study" (2013). Electronic Thesis and Dissertation Repository. Paper 1259.

9. Lazaros Nalpantidis., Antonios Gasteratos.,"Stereo Vision-based Fuzzy Obstacle Avoidance Method".International Journal of Humonoid Robotics Vol. 8, No. 1 (2011)169-183.

10. K. Muhlmann, D. Maier, J. Hesser and R. Manner, Calculating dense disparity mapsfrom color stereo images, an efficient implementation, International Journal of Computer Vision **47**(1–3) (2002) 79–88.

11. L. Di Stefano, M. Marchionni and S. Mattoccia, A fast area-based stereo matchingalgorithm, Image and Vision Computing **22**(12) (2004) 983–1005.

12. H. Hirschmuller, "Stereo Processing by Semiglobal Matching and Mutual Information," in IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 30, no. 2, pp. 328-341, Feb. 2008.

13. D. Hernandez-Juarez, A. Chac´on, A. Espinosa, D. V´azquez, J. C. Moure, and A. M. L´opez, "Embedded real-time stereo estimation via Semi-Global Matching on the GPU" The International Conference on Computational Science, Volume 80, 2016, Pages 143–153.

14. D. Burschkal, S. Lee and G. Hager, "Stereo-based obstacle avoidance in indoor environments with active sensor re-calibration," Proceedings 2002 IEEE International Conference on Robotics and Automation (Cat. No.02CH37292), 2002, pp. 2066-2072 vol.2.

15. J. Borenstein and Y. Koren, The vector field histogram-fast obstacle avoidance formobile robot, IEEE Transactions on Robotics and Automation **7**(3) (1991) 278–288.

16. C. Kyung Hyun, N. Minh Ngoc and R. M. Asif Ali, A real time collision avoidancealgorithm for mobile robot based on elastic force, International Journal of Mechanical, Industrial and Aerospace Engineering **2**(4) (2008) 230–233.

APPENDICES

Appendix - A   MATLAB Symbolic Implementation of Extended Kalman Filter.

Appendix - B   C++ Implementation of Extended Kalman Filter.

Appendix - C   C++ Implementation of Stereo Vision System.

Appendix - D   C++ Implementation of Fuzzy Decision-making System.

Appendix - E   Extended Kalman filter ground test data.

Appendix - F   Extended Kalman filter flight test data.

Appendix - G   Obstacle avoidance system ground test data.

Appendix - H   Video evidence of system test.

Note: Appendices are available on the provided compact disk (CD).