Self-aware drone swarm for transportation

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1 Motion planning

Inter-collision avoidance Baca et al. (2018) `https://www.youtube.com/watch?v=pmZZzIXIIsc` `https://www.youtube.com/watch?v=rJfQncmWpCo\&feature=youtu.be` show application of monocular vision in even tight formations.

Flocking

1.1 Trajectory tracking

Baca et al. (2018)

Algorithms

Using both a linear model predictive controller (MPC) and non-linear state feedback Baca et al. (2018)

2 Localization

GNSS-based state estimation Spurny and Thomas (2017)

Light-based Walter et al. (2018)

3 Cooperative Search

Spurny and Thomas (2017)

4 Cooperative navigation

Spurny and Thomas (2017)

5 Communication

References

T. Baca, D. Hert, G. Loianno, M. Saska, and V. Kumar. Model predictive trajectory tracking and collision avoidance for reliable outdoor deployment of unmanned aerial vehicles. In *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 6753–6760, 2018.

Vojtěch Spurny and J. Thomas. Cooperative autonomous search, grasping and delivering in a treasure hunt scenario by a team of uavs. 2017.

V. Walter, N. Staub, M. Saska, and A. Franchi. Mutual localization of uavs based on blinking ultraviolet markers and 3d time-position hough transform. In *2018 IEEE 14th International Conference on Automation Science and Engineering (CASE)*, pages 298–303, 2018.