References notes

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Guidance and Control

- [de Marina et al., 2016] (SkyScanner)
  - Smooth trajectory tracking;
  - Hypothesis: **constant horizontal air speed; 2D trajectories**;
  - Guidance algorithm:
    - Input: implicit function of the desired trajectory
    - 1: compute guidance vector field
    - 2: steer the course heading toward the guidance vector field
    - Output: bank angle

Flight Simulator

- [Boslough, 2002]
  - Dynamic Soaring;
  - 6DOF model (modified SGS 1-36 sailplane) based on real data collected in a wind tunnel;
  - use special version of FlightGear allowing flight in arbitrary wind fields to be modeled (basic models of thermals & slope lift + good model for laminar shear);
  - Genetic Programming to generate control algorithms
- [Coiro et al., 2008]
  - generate a model based on real data via system identification techniques;
  - new experimental system for data acquisition with instant communication with a ground station;
  - use the model with a 6DOF flight simulator (JSBSim)
- [Gimenes et al., 2008]

– multi-agent automatic flight control including realistic simulator with fault injection for prediction of the other agents behavior;
– survey of simulation environments (Microsoft Flight Simulator, X-Plane, FlightGear, Piccolo etc.)

References

[Boslough, 2002] Boslough, M. B. (2002). Autonomous dynamic soaring platform for distributed mobile sensor arrays. *Sandia National Laboratories, Sandia National Laboratories, Tech. Rep. SAND2002-1896*.

[Coiro et al., 2008] Coiro, D., Nicolosi, F., De Marco, A., and Familio, R. (2008). Flight test on ultralight motorglider, aerodynamic model estimation and use in a 6dof flight simulator. *Aerotecnica Missili e Spazio*, 87(1):3–13.

[de Marina et al., 2016] de Marina, H. G., Kapitanyuk, Y. A., Bronz, M., Hattenberger, G., and Cao, M. (2016). Guidance algorithm for smooth trajectory tracking of a fixed wing uav flying in wind flows. *arXiv preprint arXiv:1610.02797*.

[Gimenes et al., 2008] Gimenes, R., Silva, D. C., Reis, L. P., and Oliveira, E. (2008). Using flight simulation environments with agent-controlled uavs. In *Autonomous Robot Systems and Competitions: Proceedings of the 8th Conference*.