ARS5 – Projects

Date: January 28th, 2020

- Report
  - Introduction
  - Mathematical model (nonlinear model)
  - Control law
    - Stability analysis (well detailed)
  - Numerical simulations
    - To constant references (initial conditions close and far to the origin or to the desired values)
      - An analysis with respect to a linear controller
      - Adding noise in the states
    - Following a desired trajectory (ascending spiral trajectory, lemniscate trajectory -3D, cylinder trajectory,
    - Discussions about the results
  - Conclusions

Projects:

1. Control of a quadcopter using a feedback linearization method.
2. Control of a quadcopter using the nested saturation approach.
3. Control of a quadcopter using the backstepping technique (for the nonlinear dynamics).
4. Control of a quadcopter using a quaternion scheme.
5. Control of a fleet of drones with constant altitude (3 doubles integrators). A polynomial trajectory should be used here.
6. Control of a PVTOL vehicle (polynomial trajectory)