

Trajectory tracking for the cooperative task of two quadrotor UAVs carrying and transporting a rigid bar

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In this talk I will present the design of a geometric trajectory tracking controller for the cooperative task of two quadrotor UAVs (unmanned aerial vehicles) carrying and transporting a rigid bar, which is attached to the quadrotors via inflexible elastic cables. The elasticity of the cables together with techniques of singular perturbation allows a reduction in the model to that of a similar model with inelastic cables. In this reduced model, we design a controller such that the rod exponentially tracks a given desired trajectory for its position and attitude, under some assumptions on initial error. We then show that exponential tracking in the reduced model corresponds to the exponential tracking of the original elastic model. We also show that the previously defined control scheme provides uniform ultimate boundedness in the presence of unstructured bounded disturbances.