Abstract

This paper deals with the design problem of an H_∞ observer for robot manipulators in the presence of external perturbations. The proposed scheme is an application of an H_∞ filter to the class of robotic manipulator systems in order to guarantee disturbance attenuation of the observation error and the asymptotic stabilization of the estimation error. Using a stabilizing control law, a stabilization result based on the weak detectability of the system is obtained and the semi-global asymptotic stability of the equilibrium point of the combined system is shown. Simulation results on a six D-O-F PUMA 560 robot manipulator show the asymptotic convergence of the reconstruction and tracking error vectors