

Stability Verification For Bilateral Tele-operation System with Variable Time Delay

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Abstract

Time delay in bilateral teleoperation system was introduced as a sufficient reason to make the system unstable or certainly degrade the system performance. In this paper, simulations and experimental results of implementing p-like control scheme, under different ranges of variable time delay, will be presented to verify a certain criteria, which guarantee the system stability and position tracking. The system consists of two Phantom premium 1.5A devices. One of them acts as a master and the other acts as a slave. The study includes deriving the Phantom kinematic and dynamic model, establishing the link between the two Phantoms over Simulink in Matlab, and verifying the stability criteria with simulations and real experiments.

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