

Bilateral Telecontrol of AutoMerlin Mobile Robot Using Time Domain Passivity Control

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Abstract : This paper is presenting the bilateral telecontrol of AutoMerlin Mobile Robot having communication delay. Passivity Observers has been designed to monitor the net energy at both ports of a two port network and if any or both ports become active making net energy negative, then the passivity controllers dissipate the proper energy to make the overall system passive in the presence of time delay. The environment force is modeled and sent back to human operator so that s/he can feel it and has additional information about the environment in the vicinity of mobile robot. The experimental results have been presented to show the performance and stability of bilateral controller. The results show the whenever the passivity observers observe active behavior then the passivity controller come into action to neutralize the active behavior to make overall system passive.

Keywords : bilateral control, human operator, haptic device, communication network, time domain passivity control, passivity observer, passivity controller, time delay, mobile robot, environment force

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