
Some remarks on delay effects in motion synchronization in shared virtual environments

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This paper addresses the *motion synchronization* problem in shared virtual environments in the presence of *communication delays*. More precisely, we consider the case of multiple users interacting with the same dynamics. Unlike the conventional synchronization, the technological attempt we are interested in pursues a more *robust* and *better synchronization* that gives an almost concurrent evolution of motions between the distributed systems in absolute time-frame (earth's time). Physically, the existence of time delay prevents immediate information exchange, which disables concurrent motions between the distributed systems. Using the delay information available, the proposed controller preserves natural local dynamics and compensate for desynchronization error caused by mismatched initial conditions. Simulation tests are conducted in order to validate the considered methodology.

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