

L. Bregant, P. Gallina, P. Pascutto, “Delayed Reference Control (DRC) applied to robotic interaction tasks”, IASME 2004, Udine

Abstract:

This paper presents a non-time based control scheme for a robotic mechanism interacting with the environment and/or a human operator. This new control is based on the modification of the desired input reference x_d . Contrary to a time-based control, where the function, $x_d(t)$, is commonly calculated off-line during a path-planning process, in the proposed controller, the desired input reference is a function of time and a variable which plays the role of a time delay: $x_d(t-T)$. For this reason this controller has been called *delayed reference control* (DRC). The time delay is properly calculated on-line according to the measured force signals in such a way to improve the interaction with the environment and/or the human operator. In fact, the DRC consists in a outer force feedback loop around an inner position feedback loop. Numerical simulations will prove the effectiveness of the controller by means of a simple 1 DOF mechanism.