

Robot vibrations minimization for new applications

The Laboratory of Information Sciences and Systems (LSIS - UMR CNRS n° 6168) propose a PhD study concerning the development of a new real-time methodology so as to significantly reduce the vibrations of any serial robots by using an on line and/or off line strategy. This methodology may have a lot of robotic applications especially for all applications which need dynamic absolute precision (medical robotic) and new innovative processes using 6 axes robots.

This method is based on a new algebraic framework [2], [3], [4], [5] and an original jerk limited approach [1]. The algebraic method helps us to create non-asymptotic estimators of the parameters of dynamic model of the robot. By this way, we will be able to regularly estimate in a real time manner these parameters. Consequently, the jerk-limited method can be optimized so as to reduce significantly the vibrations of the end-effector of the robot. All these strategy will be tested and compared on a serial robot with an open control architecture at the center of ARTS ET MÉTIERS of LILLE. The working language can be english. We will appreciate a candidate with a good background in control theory and in mathematics.

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Application:

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