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Dynamic Synthesis of a Flexible Multibody System

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Abstract : This work denotes an insight into dynamic synthesis of multibody systems. A set of mechanism parameters design variable are synthetized based on a desired mechanism response, such as, velocity, acceleration and bodies deformations. Moreover, knowing the work space, for a robot, and mechanism response allow defining optimal parameters mechanism handling with the desired target response. To this end, evolutionary genetic algorithm has been deployed. A demonstrative example for imperfect mechanism has been treated, mainly, a slider crank mechanism with a flexible connecting rod. The transversal deflection of the connecting rod has been chosen as response to identify the mechanism design parameters.

Keywords : dynamic response, evolutionary genetic algorithm, flexible bodies, optimization
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