Synthesis of Multi-Fingered Robotic Hands

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Abstract

Wristed, multi-fingered hands have recently been the target of rigid-body guidance dimensional synthesis, for simultaneous tasks of all the fingertips. Solvability conditions have been derived for general hand topologies, consisting on common joints and several branching stages, to end in an arbitrary number of end-effectors, or fingertips. Synthesis equations have been created and solved numerically, to obtain new and innovative hand designs. In the recently-developed design tool, positions, velocities and accelerations of the fingertips can be defined.

Here we present the latest developments in the systematic design of wristed, multi-fingered hands, including input data analysis, synthesis equations, solvability and applications to new families of hands. Some examples are included.