

Abstract

Online gait control in human-powered exoskeleton systems is still rich research field and represents a step towards fully autonomous, safe and intelligent navigation. Many Control method performs well and with accepted interaction force between pilot and exoskeleton during system's navigation on level walking, but with large convex when walking speed changed. Adaptive LOcally WEighted Scatterplot Smoothing (ALOESS) is a modification for LOESS regression method that combine multiple regression models for predefined convex threshold. We proposed convex reduction technique for smooth tracking of arbitrary reference trajectories. The large convex resulted during changing gait from flat terrain to stair ascent are studied in this work and the overshoots are reduced to minimize trajectory tracking error. We choose the overshoots to be reduced in this step because the they are larger than undershoots. We demonstrate the proposed control strategy on computer simulations, results show that the proposed strategy can minimize the overshoot by 46%.