Comparison Performance between PID and PD Controllers for 3 and 4 Cable-Based Robots

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Abstract : This article presents a comparative response specification performance between two controllers of three and four cable based robots for various applications. The main objective of this work is: The first is to use the direct and inverse geometric model to study and simulate the end effector position of the robot with three and four cables. A graphical user interface has been implemented in order to visualizing the position of the robot. Secondly, we present the determination of static and dynamic tensions and lengths of cables required to flow different trajectories. At the end, we study the response of our systems in closed loop with a Proportional-Integrated Derivative (PID) and Proportional-Integrated (PD) controllers then this last are compared the results of the same examples using MATLAB/Simulink; we found that the PID method gives the better performance, such as rapidly speed response, settling time, compared to PD controller.
Keywords : parallel cable-based robots, geometric modeling, dynamic modeling, graphical user interface, open loop, PID/PD controllers

Conference Title : ICCARCV 2015 : International Conference on Control, Automation, Robotics and Computer Vision
Conference Location : Jeddah, Saudi Arabia
Conference Dates : January 26-27, 2015