Compensatory Neuro-Fuzzy Inference (CNFI) Controller for Bilateral Teleoperation

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Abstract : This paper presents a new adaptive neuro-fuzzy controller equipped with compensatory fuzzy control (CNFI) in order to not only adjusts membership functions but also to optimize the adaptive reasoning by using a compensatory learning algorithm. The proposed control structure includes both CNFI controllers for which one is used to control in force the master robot and the second one for controlling in position the slave robot. The experimental results obtained, show a fairly high accuracy in terms of position and force tracking under free space motion and hard contact motion, what highlights the effectiveness of the proposed controllers.