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Task Performance Evaluation for Supervisory Control Systems

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Abstract: Integrated multi-modal Supervisory Control Systems (ISCS) are a new generation ofcomplex and synergistic Human-Machine Interaction Systems (HMIS). This paper deals withmulti-modal interaction and control applied to Human Robot Systems (HRS). A task performanceevaluation technique dedicated for multi-modal interaction and control is proposed. It enablescomparison of task performance carried out by using different selection of control modes or bydifferent operators. Objective and subjective performance measures are defined.Based on the Analytical Hierarchy Process method (AHP) which takes into account qualitative andquantitative attributes and criteria, a task performance evaluation technique has been proposed forsupervisory systems which enables multimodal interaction modes .Experimental results have been carried out and some preliminary results will be presentedconcerning parallel cable-based manipulators.

Keywords : Task performance evaluation, human factors, Analytical Hierarchy Process, Adaptive supervisory control, Multi-modal interaction, Cable-based robots, Graphical-user interface.