

Task Performance Evaluation for Supervisory Control Systems

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