

A Study to Connect the Objective Interface Design Characters To Ergonomic Safety

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Abstract : Human-machine interface (HMI) intermediate system information to human operators to facilitate human ability to manage and control the system. Well-designed HMI would enhance human ability. An evaluation must be performed to confirm that the designed HMI would enhance but not degrade human ability. However, the prevalent HMI evaluation techniques have difficulties in more thoroughly and accurately evaluating the suitability and fitness of a given HMI for the wide variety of uncertainty contained in both the existing HMI evaluation techniques and the large number of task scenarios. The first limitation should be attributed to the subjective and qualitative analysis characteristics of these evaluation methods, and the second one should be attributed to the cost balance. This study aims to explore the connection between objective HMI characters and ergonomic safety and step forward toward solving these limitations with objective, characterized HMI parameters. A simulation experiment was performed with the time needed for human operators to recognize the HMI information as characterized HMI parameter, and the result showed a strong correlation between the parameter and ergonomic safety level.

Keywords : Human-Machine Interface (HMI), evaluation, objective, characterization, simulation

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