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Operational Complexity of Direct Manipulation Tasks in a Windows Environment

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Abstract

A method to quantify operational complexity of direct manipulation tasks in a windows environment is discussed. The method utilises a formula from communication theory due to Shannon and Weaver which describes the uncertainty $H(p_1, p_2, \dots, p_n)$ in outcome of an event which is the result of a Markov process where the individual events have probabilities of occurrence P_1, p_2, \dots, P_n . A taxonomy of basic windows operations is developed for Microsoft Windows and used to show that a windows dialogue can also be described as a Markov process. The H formula is then applied to determine the total complexity of a sequence of basic windows operations and thus provide some measure of the complexity of a given task as seen by the user. An estimate of the total entropy of a Microsoft Windows language source is obtained, indicating that the redundancy of windows dialogue is about 28%.

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