DIALOGUE ACTIVATION: AN APPROACH TO USER CENTRED CONSTRUCTIONAL MODELLING OF DIRECT MANIPULATION INTERFACES

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Abstract

Early stages in the development of interfaces involve the construction of models that aid interface analysis prior to construction. These behavioural models generally take a user-centred perspective. In contrast, subsequent implementation models tend to take a system-centred view of the interface. As a consequence of this change in viewpoint, the task of translating an analysis model into its implementation equivalent is extremely difficult.

This thesis proposes a constructional modelling approach for direct manipulation user interfaces (DMUI) that takes a user action viewpoint. Based on a hierarchy of dialogue groups and the notion of dialogue activation, sequence and concurrency within the interface can be described. Dialogues can be in one of two possible states, active or inactive. An active dialogue is one with which the user is able to interact. A dialogue becomes active only if its parent is active, and it receives one of a set of possible activating events. A second set of deactivating events can also exist. In this way a dialogue can be specified in terms of both a user's actions and the sequences in which those actions may be carried out. Dialogue Activation Language (DAL), a language for describing such models is developed, and shown to be applicable to a range of interaction styles. An architecture capable of implementing the dialogue activation model is proposed, and a user interface development system (PIPS), based on this architecture and using DAL is described.

It is argued that DAL takes the same view of an interface as would be used in its initial analysis, and as a consequence, facilitates the translation of these early interface models into working prototypes. In addition, it is proposed that taking the DAL approach to modelling DMUI allows great flexibility in describing interaction and encourages experimentation with entirely new interaction styles.

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