

Cost-Driven Transformation of Digraphs with Interdependent Nodes

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Abstract

Computer applications are not what they used to be. With the advent of navigation-oriented technologies - such as the world wide web - applications are accessed as a network of linked pages that capture information as the user navigates between them and adds it to the state of the application, processing it upon demand. This network forms a graph that is amenable to analysis using Graph Theory.

When a correspondence is made between the navigation patterns of the application and in-order lists of visited nodes within the graph, it is possible to simplify the graph and transfer the simplifications back to the application domain, resulting in a "better" application. In our model these simplifications take the form of cost-driven transformations. There are many different kinds of transformations and many different costs that may be considered, the use and assignment of which depends on the application domain. We feel that when these transformations and costs mirror the costs of a real-world application's use and development, the simplifications transferred back to the application will be valid.