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Concurrent speculative execution of selector applications

ABSTRACT

Upon detecting a user context to select content items, an operating system speculatively launches software applications that provide the particular type of content items. A user interface is provided that enables a user to select items from collections of items provided by the applications. The user interface enables a user to perform such selection without having to launch additional applications or switch between applications.

KEYWORDS

- Operating system
- Selection UI
- Concurrent processing
- Speculative execution
- Item collections
- Repositories

BACKGROUND

Users often use computers to make a selection of items from collections of data, such as lists of contacts, email archives, photo archives, music collections, etc. Usually, such collections are stored by a service accessible over a network. Access to such a service is gated by authorization of the user's account at that service. Users can utilize different accounts or multiple services of the same kind, provided by the same service provider, or by different service providers. For example, users may have photos stored remotely by multiple storage and social media service providers.

A user can initiate selection of items from a collection stored by a service provider in many contexts, e.g., to attach photos to an email message. The normal flow of operation is for the user to first select a software application that provides access to the service, followed by selection of items, prior to returning to the original task. This can pose a difficulty for users, e.g., when the collection a particular item is located in is not known in advance, or when items from multiple collections are to be selected.

In such situations, it is advantageous to provide users with simultaneous access to multiple collections. While this can be accomplished with support from the respective applications, the approach has several drawbacks. First, the software application needs to be transformed such that it is aware of and can access multiple accounts simultaneously. This can be difficult, e.g., when users have accounts with multiple service providers. Additionally, it may be undesirable for security reasons for users to provide information to third party applications about user accounts with different service providers.

DESCRIPTION

This disclosure describes techniques to enable a user to select items of a particular type from multiple applications or service providers. An operating system and application platform that permits speculative execution of applications is implemented. With user permission, an application can request the operating system to start other applications for the purpose of selecting items of a particular kind.

When the user initiates item selection, the operating system or application platform system executes multiple applications simultaneously, rather than the conventional mechanism of presenting the user with a choice of a single application from a set of applications that provide items of the requested type. The user is presented with a choice of multiple applications to select

the items. The selection is presented in a user interface that allows the user to switch between the applications and select items from multiple applications at the same time.



Fig. 1: User interface with multiple applications for item selection

Fig. 1 illustrates an example user interface that illustrates multiple applications, initiated by the operating system using speculative execution. As seen in Fig. 1, the user has initiated an email application (100), and indicated that pictures are to be attached to an email message. With user permission, the operating system speculatively executes multiple applications to enable selection of pictures, e.g., an image gallery application (120) and a messaging application that includes an image gallery (130) simultaneously, with respective user account information and credentials. The applications are referred to as selector applications. While Fig. 1 illustrates two applications, any number of applications can be executed. Applications are selected and launched with specific user permission.

Pictures provided by each application are presented to the user, enabling the user to select specific pictures as attachments. In the example shown in Fig. 1, the user has selected one picture (170) from the image gallery, and two pictures from the messaging application (150 and 160). The speculative execution of selector applications by the operating system can be utilized to enable users to perform selection of items from contacts lists, email archives, photo archives, music collections, etc.

For the case that certain speculatively executed applications discussed herein may collect or use personal information about users (e.g., user data, information about a user's social network, user's location and time at the location, user's biometric information, user's activities and demographic information), users are provided with one or more opportunities to control which personal information is supplied by the operating system to the speculatively executed application . That is, the systems and methods discussed herein allow to collect, store and/or use user personal information specifically upon receiving explicit authorization from the relevant users to do so.

For example, a user is provided with control over whether programs or features collect user information about that particular user or other users relevant to the program or feature. Each user for which personal information is to be collected is presented with one or more options to allow control over the information collection relevant to that user, to provide permission or authorization as to whether the information is collected and as to which portions of the information are to be collected. For example, users can be provided with one or more such control options over a communication network. In addition, certain data may be treated in one or more ways before it is stored or used so that personally identifiable information is removed. As one example, a user's identity may be treated so that no personally identifiable information can

be determined. As another example, a user's geographic location may be generalized to a larger region so that the user's particular location cannot be determined.

CONCLUSION

Upon detecting a user context to select content items, an operating system speculatively launches software applications that provide the particular type of content items. A user interface is provided that enables a user to select items from collections of items provided by the applications. The user interface enables a user to perform such selection without having to launch additional applications or switch between applications.