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Using Smart Macros to Optimize User Actions on Smartphones (#5501)

Improves user experience in remote versions of desktop applications

This software optimization solution improves the user experience of using desktop applications on mobile phones. The generic architecture consists of a front-end client that sits at the mobile phone and a back-end server that runs in the target platform where the applications are installed, which can be a desktop computer, a cloud service, or the mobile phone. The building blocks of the system are smart macros that aggregate user actions required for tasks. They do not have the robustness issues of classical graphical macros nor depend on application support as do application macros. The design approach enables users to create custom smart macros on their desktop computer for any application and then invoke and execute them from their mobile phone, reducing the burden of executing tasks and providing a near-desktop level experience.

The system uses four design principles: application-agnostic robust macros, low-burden macro presentation, macro extensibility, and offline macro suggestion. The system further analyzes user behavior and suggests one or more macros based on a repetitive pattern of user behavior. While the system is specific to making desktop-based applications usable on a mobile phone, the design principles can be applied to native mobile applications as well. This Georgia Tech innovation significantly reduces user burden and bridges the gap of user experience between a desktop computer and a smartphone.

Benefits/Advantages

- **Improves user experience**: Provides near-desktop level experience for the mobile phone environment
- **Easy to use**: Reduces user burden by presenting programmable macros in a simple and user-friendly manner
- **Causes minimum overhead**: Does not contain any process that degrades the remote desktop performance because of high requirements for the central processing unit (CPU) or memory
- **Deployable**: Requires few modifications to the existing remote desktop system
- **Portable**: Features a generic design that is transferrable to platforms other than the target platform

Potential Commercial Applications

This technology improves user access to a desktop and its applications from a smartphone or other mobile platform:

- Software as a service (SaaS)
- Collaboration and conferencing services

- Business intelligence and data mining tools
- Word processor, presentation, and spreadsheet applications
- Personal accounting software
- Cloud-based storage services
- Email clients
- Website development systems

Background/Context for This Invention

Remote desktop software allows users to remotely access their desktops or other non-mobile platforms. Users need such access, for example, to retrieve data and files stored on their primary computer or to remotely access their workplace machine from home. In addition, information technology (IT) staff typically use remote desktop software to accomplish remote troubleshooting of desktop computers.

The constrained form factor of smartphones can impose a high burden on users due to the number of actions required to accomplish tasks. This Georgia Tech innovation reduces the user burden by employing smart macros that eliminate redundancy and intelligently aggregate actions. The user's mobile experience improves to near-desktop levels both in terms of subjective and objective metrics in accomplishing remote tasks from the smartphone.

Note: This is just one of several technologies for application mobilization and wireless computing developed by Raghupathy Sivakumar and his team. Click here to see the other available innovations.

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More Information

U.S. Patent Issued - 9,383,903

Publications

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/using-smart-macros-optimize-user-actions-smartphones

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot