AN INTELLIGENT ASSISTING AGENT FOR DESKTOP ENVIRONMENT

The project is aimed at assisting the user by observing his/her working habits. A ***semi-autonomous*** agent (user holds the control over the agent application) is built, which keeps track of user-working habits and builds a ***profile*** in terms of application parameters. It uses the profile in assisting the user that includes managing files and shortcuts. The common mentality of a user is to keep the things arranged neatly. The same applies to a computer desktop too. Computer Desktop can be used for placing applications and shortcuts. It causes irritation, as the desktop is filled with lots of applications and shortcuts. A common user spends most of his time in opening and switching between the applications and in managing files. There are many ways to arrange and open applications by creating shortcuts and placing them at various places like on to a desktop, system menu and so on. The need of an agent comes into picture at this point to get rid of managing shortcuts, files and applications. The available agent applications are ***static*** in nature. They can assist the user by providing shortcuts but require continuous user intervention. User has to change the agent application's settings as the requirement changes. The current agent application developed requires less user attention in assisting the user. The following structure is used in building the user profile. User profile is a representation of user needs, which best reflects his mentality irrespective of the environment on which we are applying the concept of a profile.

```
Struct {
        Application name;
        Time elapsed between system startup time to the application startup time;
        Time spent on a particular application;
        Successive gap between two instances of the same application;
        Number of times an application is used;
    };
```

Machine learning techniques were employed in updating the profile and in assisting the user. While assisting the user the agent receives the user feedback that is considered in updating the profile. User status (user activity presence) and the Processor load were also considered before assisting the user. This gives *autonomy* to the agent application in taking decisions. The whole work is divided into different individual co-operative agents including the User Monitoring agent, the Assistant, Learning Agent and the Background agent. These agents communicate each other using a predefined set of commands called ***ontology***. Blackboard architecture is used for agent communication. The agent application is capable of assisting the user in the following ways.

- Frequently greets the user with date and time dialog.

- Provides a list of recently and frequently used applications through Application Tray.
- Allows opening a file or application using assigned keywords that has used at least once. If the keyword is not assigned to any application or file, partial search is performed to find the closest match.

- Rebuilds the Desktop. This includes changing wallpaper, managing Recycle Bin and moving infrequently used desktop items (shortcuts or applications and folders) to a temporary folder.

- Alerts the user on Disk full condition and provide the means for recovering system space.

- Keeps the system management tools like Disk Defragmenter, Control Panel tools closer to the user.

- Attempts to open the best three applications on system boot that were found as the most frequently used applications after the system boot.

GUI is provided to allow the user controlling the agent application. User can start or stop the agent application or change the default settings of the above features. The agent application is tested with real users and shown encouraging results. It is observed that using the agent applications number of mouse clicks and keystrokes can be reduced to open an application. The user can open an application with a single a "*click*", with out loosing the focus from the current active application. This is best useful in opening and managing applications present remotely in the directory hierarchy.

The agent may further be equipped to learn user behavior over the internet and it may try to assist the user based on the user interest investigated. The interest of user is investigated based on past net browsing. Following are the features which are expected to be added in the agent.

- Black listing the websites automatically which are expected not to be of user interest or may be having non-sober content.
- Helping user to search the required material on internet which are in domain of his personal interests.
- Keeping log of files of user for a helpful book-keeping and easy recall-back after a period.