

UI AUTOMATION AND ITS APPLICATION IN C#

UI Automation is the accessibility framework developed for Microsoft Windows. It is designed to improve the applications interfaces for disabled people. UI Automation provides developers with tools to create great features, like screen readers that give the user the information about the UI, or the ability to interact with UI using unusual input.

This framework is available on any platform that supports Windows Presentation Foundation (WPF) applications. Unfortunately, not many people seem to know about it due to the lack of information or proper documentation.

This summer I have been working on desktop application that was to read and store a URL of the web site the user was viewing through the third-party browser.

One way to implement this feature is by developing a custom plug-in for a web browser. This allows our application to access the URL from active browser tab directly through the mentioned plug-in.

However, significant amount of time must be spent on learning how to write plug-ins and the ways they communicate with desktop application. Additionally, you have to create a separate plug-in for each browser. Unless you already possess the required skills for that task, this is not the proper choice.

The other way to implement this feature is by using UI Automation framework available in C#. The majority of Windows applications and popular web browsers such as Internet Explorer, Microsoft Edge, Firefox, Opera and Google Chrome provide its support.

Although all browsers are different, they have one thing in common. A special text field, called Search or Address Bar is located near the top of the window. Its main purpose is to display or enter the URL address or the page.

UI Automation provides the ability to access each window's visual tree – a logical structure of its visuals and controls. Using a tool called “Inspect” we can select any UI element on the screen and view its accessibility data. The tool utilizes the same UI automation framework for this functionality.

Using “Inspect”, if we go down the visual tree of any popular browser, a search bar will be the first editable control. Since visual tree of applications rarely encounters heavy changes, we have multiple ways of accessing desired control.

We can search through the child elements of the parent element, through subtrees of the parent element or directly accessing our control by its name.

The property will usually contain a URL of the currently open tab – exactly the kind of information we are looking for.

Obviously, the method is not fully safe. The user might install extension for

his browser that automatically clears the search bar. We will simply see an empty string as a result. Still, UI automation could be a neat placeholder for a more robust system, should you commit to plug-in development in such situation.

The overall UI automation is both very easy to learn and utilize in development. It can be difficult to provide the key features like the user input manipulation, focus transfer and removal, interface inspection when other solutions are too complex or too expensive to develop and maintain. The possible implications are automated interface testing, user input logging, controlling computer by voice etc. The only limit is your imagination.

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UDC 621.001.12/18:629.7 (043.2)

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THE FUTURE OF AVIATION INDUSTRY

To start with, I must say that aircraft industry by 2050 is expecting a seven-fold increase in air traffic, along with the problem of increasing hotbed gas blow-out. That's why the aircraft industry must be upgraded. But how will these changes affect us and our planet?

We can't underestimate the global changes relating to the technologies. Every research, dedicated to improving our knowledge about different aspects of our life, including aviation industry, bring us a little bit closer to the world, where our daily routine becomes more interesting and safer. We are facing a large amount of different novelties

Among such innovations there will be the electrical engines for aircrafts. One of their benefits is light weight as compared to large, sullen gas turbine or turbo prop engines. So the aircrafts will be like gliders plowing the skies. In addition low cost of such energy is known to every human being. But, still the greatest disadvantage of the electric engine is the capacity of power. It's very low comparing with old fellow gas turbine engine. Thus, we won't see this "fuzzy" engine in the nearest future. As you can see there are many problems to be solved.

As a counterpoise we can place the bio fuel, which, in the nearest future, will replace the ordinary jet.

As we know all biotic staff can be renewable due to its origin. It has been shown by a lot of demonstrative flights of aircrafts using bio fuel. There is one major advantage of this fuel over the others – it is the effect of by bio fuel on the environment, which cannot be overemphasized.

But when we talk about efficiency, bio fuel gives up this point to jet fuel.