

GUITAR - A GUI Testing Framework

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Overall, GUITAR is a powerful GUI testing tool that can help improve the efficiency, accuracy, and effectiveness of software testing.

The testing tool was hard to configure, as from its original website there are no details regarding the dependencies and prerequisites it comes with. Java and ant are required for the tool to work. Something surprising is the versatility of the testing tool, as it supports multiple platforms (windows, linux, macos).

After the installation from the official website <https://sourceforge.net/projects/guitar/files/guitar%201.0/stats/timeline>, the tool required further configuration depending the type of the user. Instructions were found in the file "README-USERS". After configuring the target for the gui testing application in jfcripper.properties, jfc ripper could be started.

After ripping the application, a gui file is outputted with the windows of the application, attributes corresponding to those windows, containers within those windows and the widgets that are part of the widgets

```
-<GUIStructure>
- <GUI>
- <Window>
+ <Attributes></Attributes>
- <Window>
- <Container>
- <Contents>
- <Container>
+ <Attributes></Attributes>
- <Contents>
- <Container>
+ <Attributes></Attributes>
- <Contents>
- <Widget>
- <Attributes>
- <Property>
<Name>Id</Name>
<Value>w2688934710</Value>
</Property>
- <Property>
<Name>Class</Name>
<Value>javax.swing.JPanel</Value>
</Property>
- <Property>
<Name>Type</Name>
<Value>SYSTEM INTERACTION</Value>
</Property>
</Contents>
</Container>
</Window>
</GUI>
```

This GUI structure can be converted to an event flow graph

```
- <EFG>
- <Events>
- <Event>
<EventId>e2755731202</EventId>
<WidgetId>w2755731202</WidgetId>
<Type>SYSTEM INTERACTION</Type>
<Initial>true</Initial>
<Action>edu.umd.cs.guitar.event.JFCActionHandler</Action>
<Listeners>Project$W1Listener</Listeners>
</Event>
- <Event>
<EventId>e322932852</EventId>
<WidgetId>w322932852</WidgetId>
<Type>SYSTEM INTERACTION</Type>
<Initial>true</Initial>
<Action>edu.umd.cs.guitar.event.JFCActionHandler</Action>
<Listeners>Project$W2Listener</Listeners>
</Event>
- <Event>
<EventId>e3532357584</EventId>
<WidgetId>w3532357584</WidgetId>
<Type>SYSTEM INTERACTION</Type>
```

Afterwards, test cases of a given length are generated. This outputs a document containing GUI states, from the beginning of the application and after the execution of each of the events.

```
- <TestCase>
+ <GUIStructure></GUIStructure>
- <Step>
<EventId>e1079809760</EventId>
<ReachingStep>>false</ReachingStep>
+ <GUIStructure></GUIStructure>
</Step>
- <Step>
<EventId>e1292941904</EventId>
<ReachingStep>>false</ReachingStep>
+ <GUIStructure></GUIStructure>
</Step>
- <Step>
<EventId>e322932852</EventId>
<ReachingStep>>false</ReachingStep>
- <GUIStructure>
- <GUI>
- <Window>
- <Attributes>
```

The advantages of the application are the platform independence, the free availability, the possibility to use test scripts for a longer period in the development process to test the application after changes have been made.