

Automated Testing for AmiGO2

Web application and data tests are **necessary**

- Do expected pages exist?
- Do pages operate as expected?
- Has the data been loaded properly?
- Does the page have the proper layout?

Web application and data tests should be **automated**

- Ensure data and application quality
- Speed up release cycles
- Make use of 'write once, test every time' principle
- Facilitate communication between users and developers
- Formalize an *ad hoc* process

Web application and data tests should be **easy to create**

- English-like language
- Can be assembled like bricks
- Separation between creation and implementation

Introducing the behave (and Selenium) Suite

behave is a testing framework based on the idea of behavior-driven development (BDD)

- Uses tests written in a natural language style (users), backed by Python code (developers)
- Encourages collaboration between developers and non-technical participants in a software project
- Uses examples to describe the behavior of the application
- <http://pythonhosted.org/behave/>

Selenium is a framework for simulating a user's interaction with a web browser

- Automated clicks, text entries, retrieval of page elements...
- Can use different web browsers
- <http://www.seleniumhq.org/>

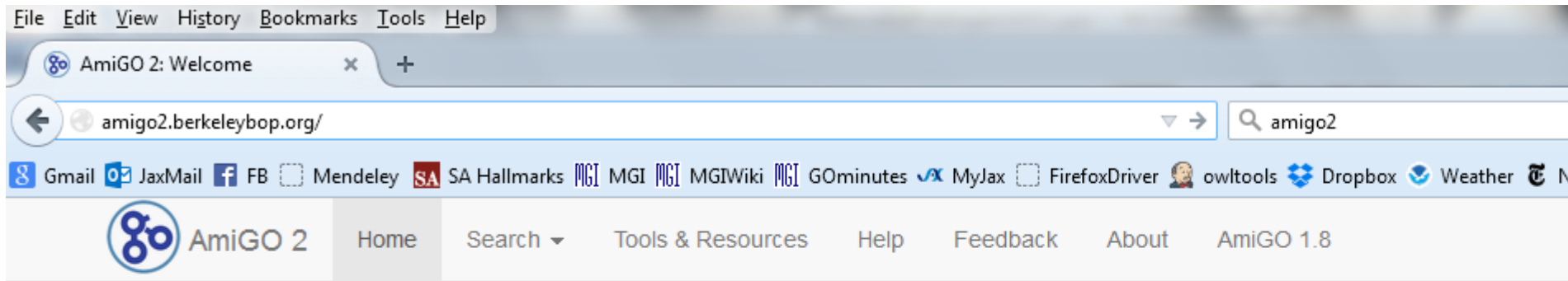
Putting these together, we have an accessible test suite that can simulate user interaction with AmiGO 2, checking both the application and the data it works on.

behave

- Create features with scenarios describing the desired behavior that result from web page interactions
 - Do expected pages exist?
 - Do pages operate as expected?
- behave runs the features
- Results report returned

```
Failing scenarios:  
  05_autocomplete_basic.feature:16  "neurogenesis" in the  
click goes to term page  
  
4 features passed, 1 failed, 0 skipped  
23 scenarios passed, 1 failed, 0 skipped  
51 steps passed, 1 failed, 2 skipped, 0 undefined  
Took 1m28.982s
```

Do expected pages exist?



AmiGO 2

behave

Feature: AmiGO basic pages okay

AmiGO's basic landing pages are all functional;
all non-data pages can be correctly accessed.

Scenario Outline: the core landing pages exist

Given I go to page "http://amigo2.berkeleybop.org/"
then the title should be "AmiGO 2: Welcome"

Iteration

Examples: core pages

#	page	title
	/	AmiGO 2: Welcome
	/amigo	AmiGO 2: Welcome
	/amigo/landing	AmiGO 2: Welcome
	/amigo/search/annotation	AmiGO 2: Search
	/amigo/search/ontology	AmiGO 2: Search
	/amigo/search/bioentity	AmiGO 2: Search
	/amigo/software_list	AmiGO 2: Tools and Resources
	/grebe	AmiGO 2: Grebe
	/goose	AmiGO 2: GO Online SQL/Solr Environment
	/rte	Term Enrichment Service
	/amigo/visualize	AmiGO 2: Visualize
	/visualize	AmiGO 2: Service Status for visualize server
	/amigo/schema_details	AmiGO 2: Schema Details
	/amigo/load_details	AmiGO 2: Load Details
	/xrefs	Cross References

Do pages operate as expected?

behave

Feature: AmiGO autocomplete basically works

AmiGO can have correct data in the drop-down and navigate to a medial page.

Scenario: "neurogenesis" in the general search with submit goes to medial

Given I go to page "/amigo/landing"

and I type "neurogenesis" into the general search

and I submit the general search

then the title should be "AmiGO 2: Search Directory"

and the class "panel-body" should contain "neurogenesis"

The screenshot shows a web browser window with the address bar displaying "amigo2.berkeleybop.org/amigo/medial_search?q=neurogenesis+". The search input field contains "neurogenesis" and a dropdown menu is open, showing several autocomplete suggestions: "positive regulation of neu...", "negative regulation of neu...", "regulation of neurogenesis:", "neurogenesis (GO:0022008", "dentate gyrus subgranular", and "lateral ventricle subepend...". The page header includes the AmiGO 2 logo and navigation links: Home, Search, Tools & Resources, Help, Feedback, and About. A light blue banner below the header states: "You are using an AmiGO Labs prototype. See here for more information." The main heading of the page is "Search Director". Below this, there is a section titled "Text search document selection" and a paragraph of text: "The following results were found for **neurogenesis** using a general search over all text fields."

Has the data been loaded properly?

behave

Feature: AmiGO search start pages show counts consistent with data loads

Scenario Outline: the search page shows counts consistent with data loads

Given I go to search page "<searchpage>"

then the count should be approximately "<count>"

Search Ontology

Found entities

Total: 1319105; showing 1-1

Search Annotations

Found entities

Total: 4568448; showing 1-10

Search Genes and gene products

Found entities

Total: 779219; showing 1-10

Results count 10

Does the page have the proper layout?

Grab screenshot (to be reviewed by users / developers)

behave

Feature: AmiGO pages have proper layout

Scenario Outline: the core landing pages exist

Given I want a screenshot of page "<page>"
then the screenshot is entitled "<title>"