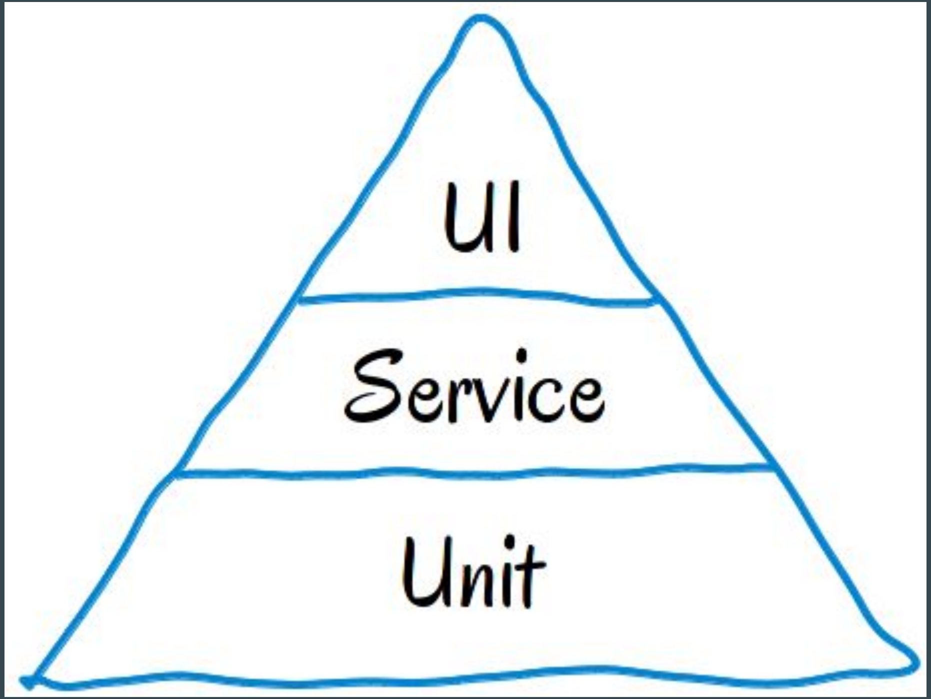
AI testing

•••

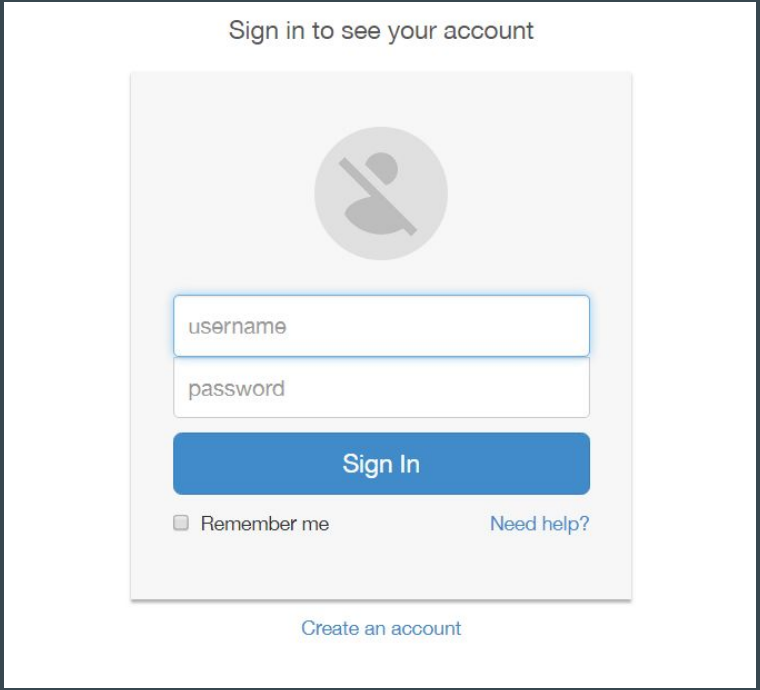
Godfrey Nolan

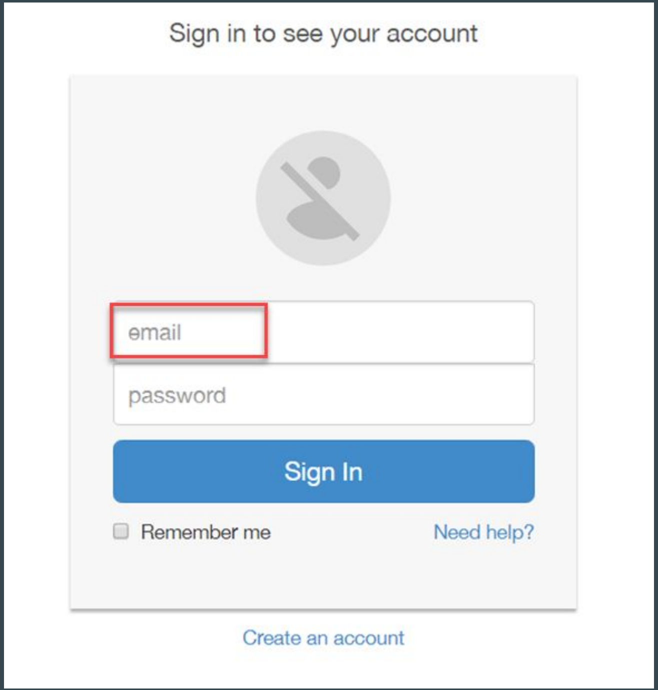
Current State



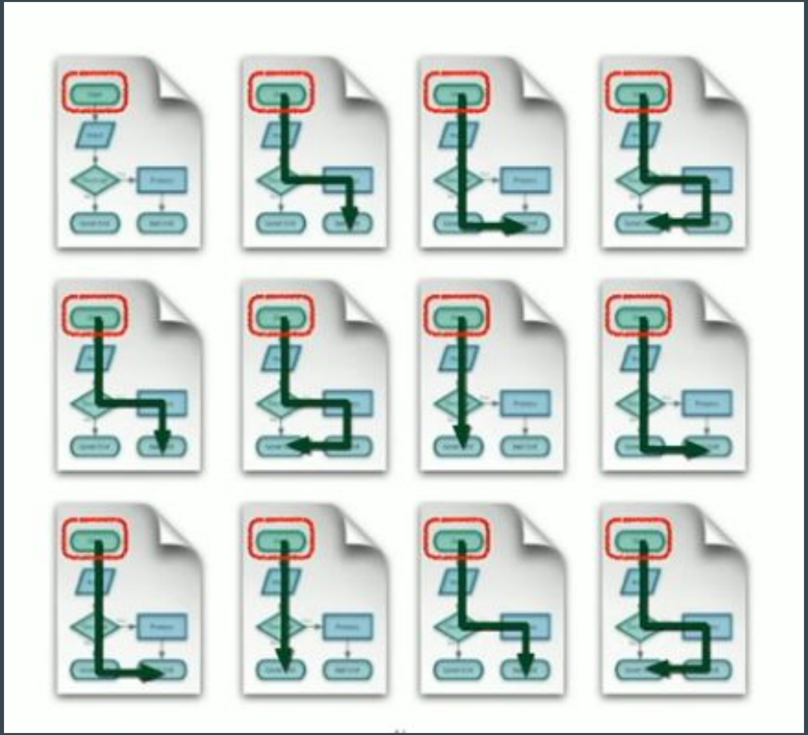
Why Bother?

Why are UI tests so brittle?

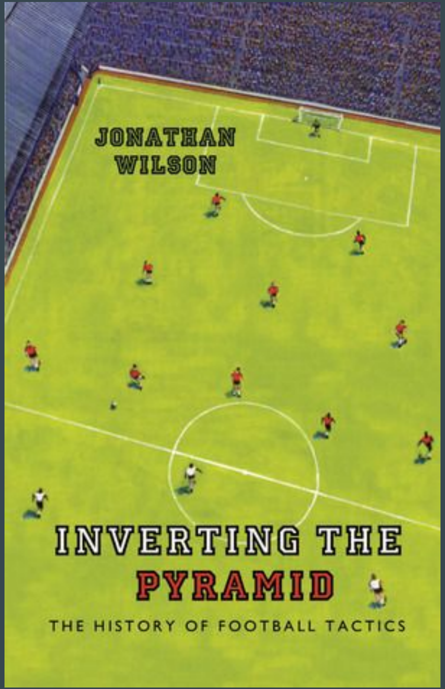




Why are UI tests so brittle?

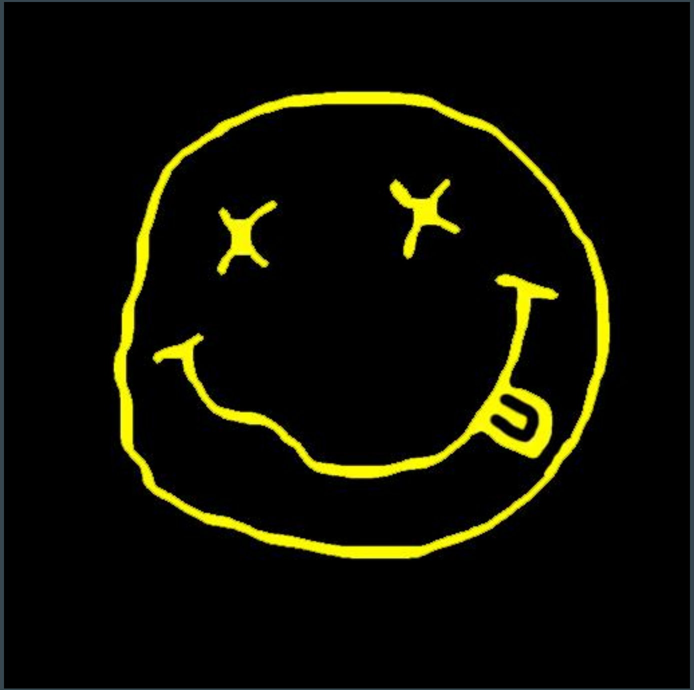


What do we want?

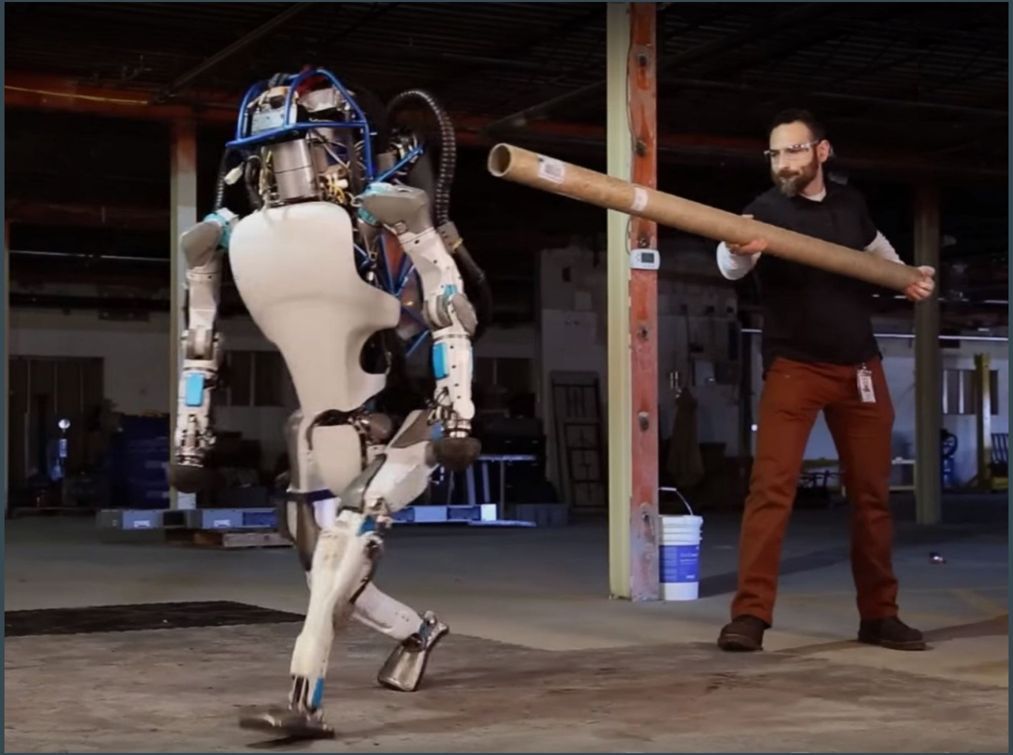


What do we want?

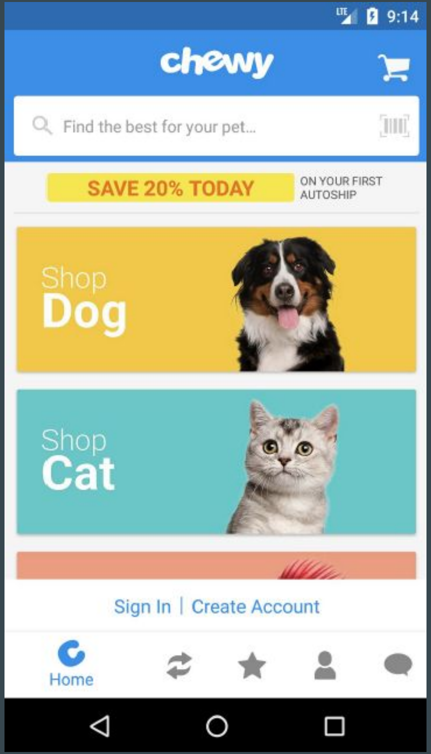
Define Nirvana



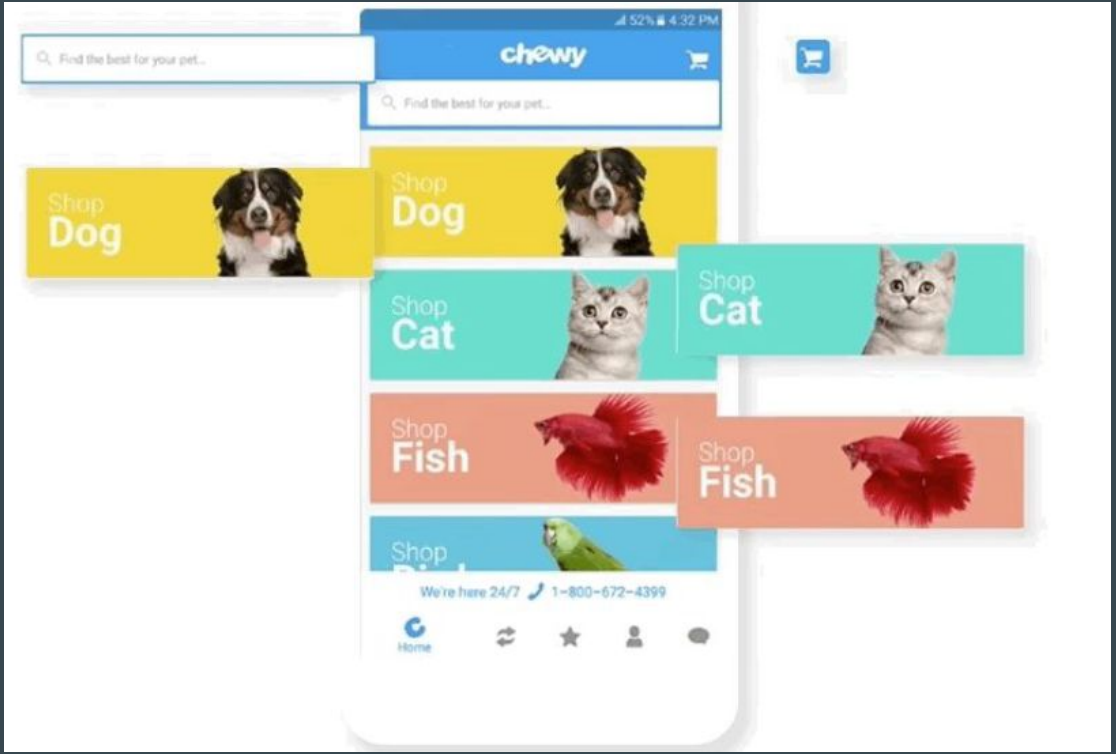
AI Testing?



AI Testing?

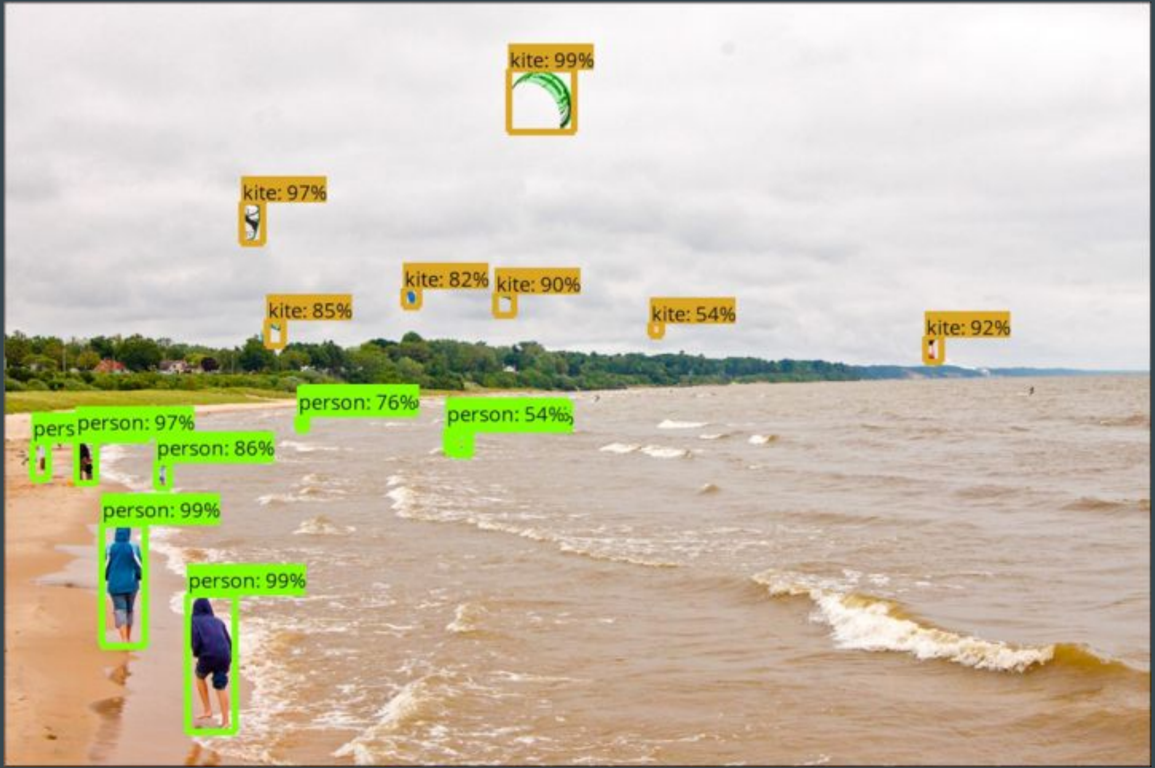

9:14
chewy
Find the best for your pet...
SAVE 20% TODAY
ON YOUR FIRST AUTOSHIP
Shop Dog
Shop Cat
Sign In | Create Account
Home

AI Testing?


Find the best for your pet...
chewy
Shop Dog
Shop Cat
Shop Fish
Shop
We're here 24/7 1-800-672-4399
Home

Machine Learning

- Get Data
- Train & Test
- Adjust
- Deploy
- Test & Validate



Machine Learning

- Get Data
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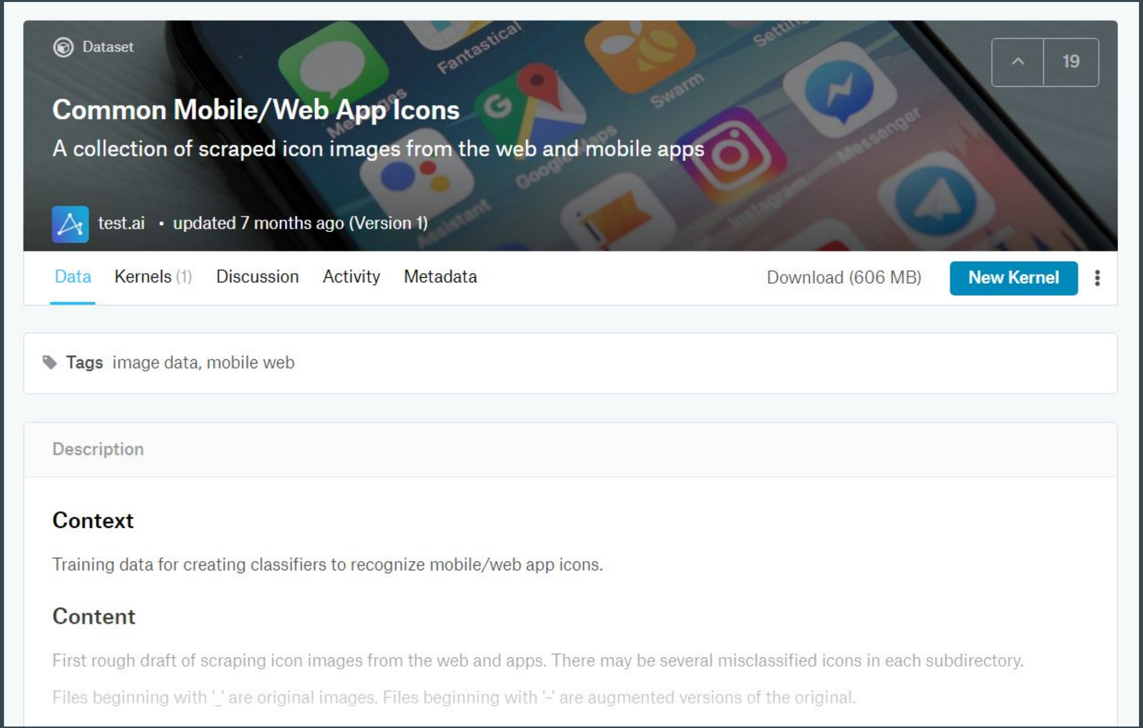


Common Mobile/Web App Icons

A collection of scraped icon images from the web and mobile apps

test.ai • updated 7 months ago (Version 1)

Tags image data, mobile web

Description

Context

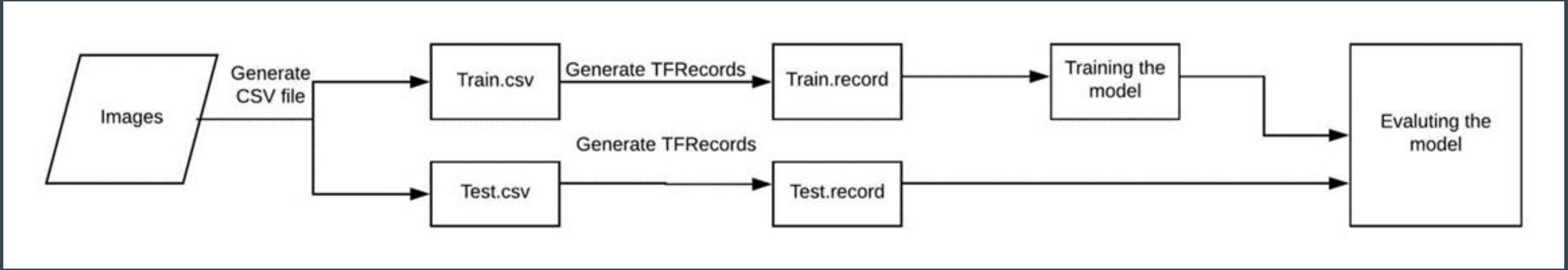
Training data for creating classifiers to recognize mobile/web app icons.

Content

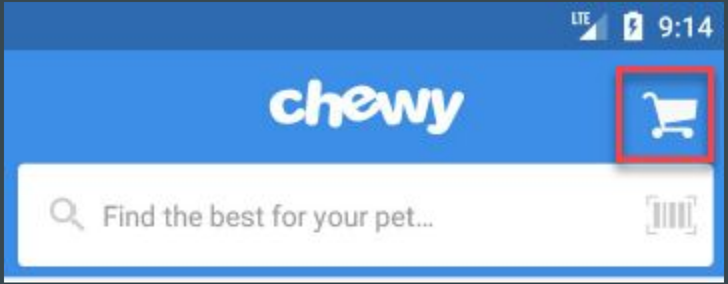
First rough draft of scraping icon images from the web and apps. There may be several misclassified icons in each subdirectory.

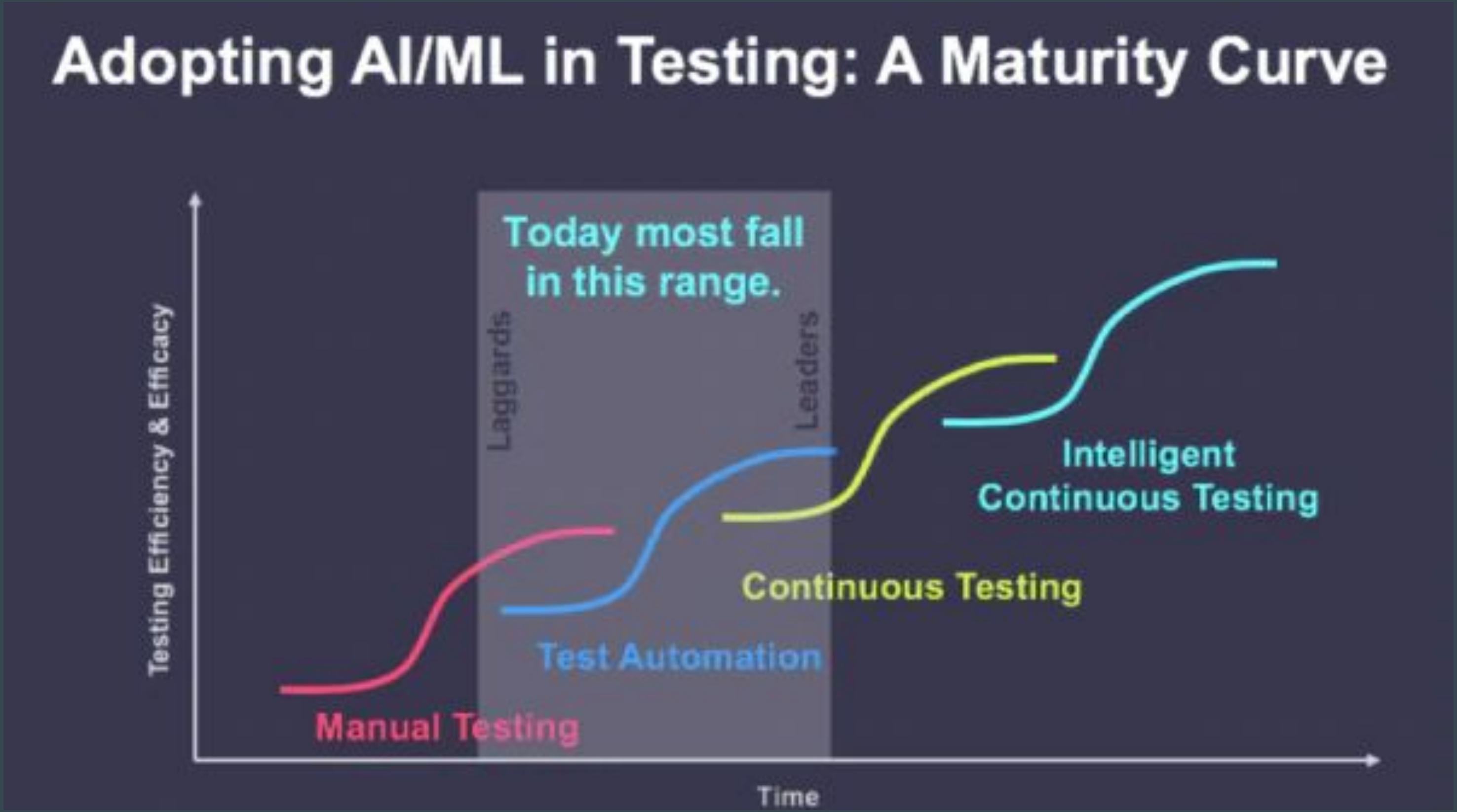
Files beginning with '_' are original images. Files beginning with '-' are augmented versions of the original.

Machine Learning



Machine Learning




Adopting AI/ML in Testing: A Maturity Curve
Today most fall in this range.
Laggards
Leaders
Testing Efficiency & Efficacy
Time
Manual Testing
Test Automation
Continuous Testing
Intelligent Continuous Testing

https://www.ca.com/en/blog-highlight/artificial-intelligence-and-continuous-testing-its-the-next-big-thing-really.html

Approach

- Assemble Big List of Tools
- Assemble Big List of Criteria
- Do BLT vs BLC
- Ta-dah!

Big List of AI Testing Tools

AccelQ	Deckard AI	Opsani	Tesabot
Acellere	Deep Code	Parasoft SOAtest	Test AI
Adevi	DiffBlue	Prodo	Test Complete
APImetrics	Eggplant	Qordoba	Test Craft
AppDiff	Endtest	Qualicen	Testim
Appium Classifier Plugin	EvoSuite	RainforestQA	Test Sigma
Applitools	Fedr8	ReTest	The Grid
Appvance	Firedrop	Saucelabs	Tosca
Assister	Functionize	Sealights	Uizard
Automorph	Ghost Inspector	Selenium with AI	Yotako
AutonomIQ	Kite	Sema	
Codebeat	Logz	Sourcegraph	
Codebots	Mabl	Source{d}	
Codota	Memorio	Stepsize	
Decibel Insight	Near	Tara Intelligence	

Big(ish) List of Criteria

- Self Healing
- Flexible
- Generic solution
- Web and Mobile
- Test more than one Page/Activity/View
- Export code for CI
- Repeatable
- Quick
- No False Positives
- Not prohibitively expensive
- Scalable
- Still funded

Sample AI tools

- AccelQ
- AutonomIQ
- Eggplant
- Mabl
- TestAI
- Testim
- Sapienz

AccelQ

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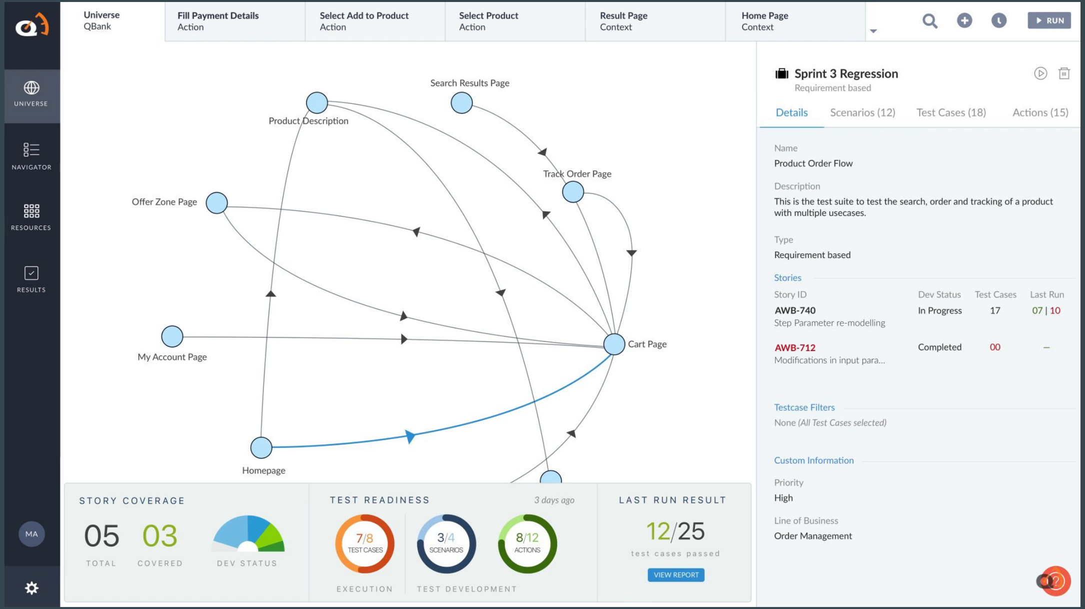


Universe
QBank

Fill Payment Details
Action

Select Add to Product
Action

Select Product
Action

Result Page
Context

Home Page
Context

Sprint 3 Regression
Requirement based

Details | Scenarios (12) | Test Cases (18) | Actions (15)

Name
Product Order Flow

Description
This is the test suite to test the search, order and tracking of a product with multiple usecases.

Type
Requirement based

Stories

Story ID	Dev Status	Test Cases	Last Run
AWB-740 Step Parameter re-modelling	In Progress	17	07 | 10
AWB-712 Modifications in input para...	Completed	00	–

Testcase Filters
None (All Test Cases selected)

Custom Information

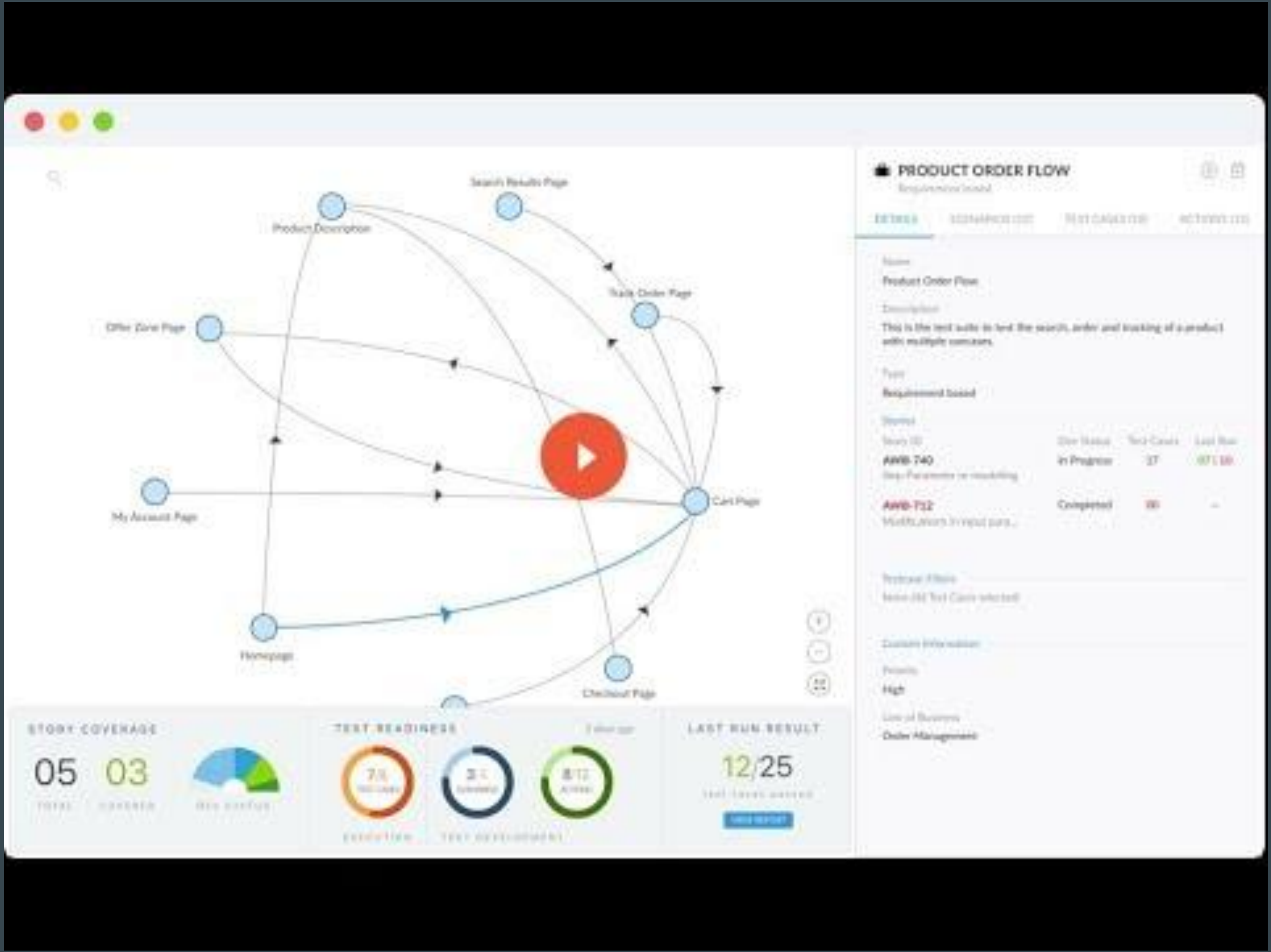
Priority
High

Line of Business
Order Management

STORY COVERAGE
05 TOTAL
03 COVERED
DEV STATUS

TEST READINESS
3 days ago
7/8 TEST CASES
EXECUTION
3/4 SCENARIOS
8/12 ACTIONS
TEST DEVELOPMENT

LAST RUN RESULT
12/25
test cases passed
VIEW REPORT



PRODUCT ORDER FLOW

Requirement based

DETAILS | SCENARIOS | TEST CASES | ACTIONS

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Description
This is the test suite to test the search, order and tracking of a product with multiple scenarios.

Type
Requirement based

Stories

Story ID	Dev Status	Test Cases	Last Run
AWB-740 [illegible]	In Progress	37	[illegible]
AWB-712 [illegible]	Completed	[illegible]	–

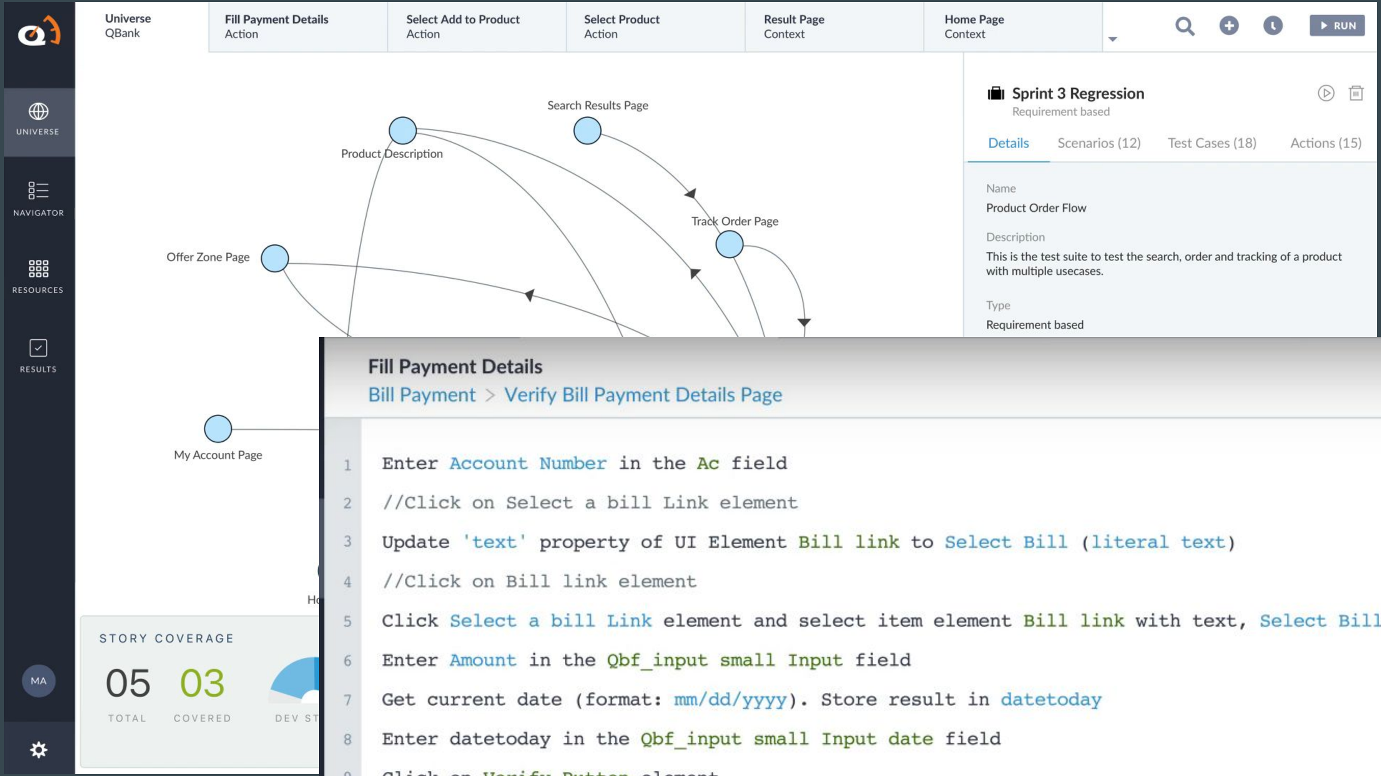
Testcase Filters
[illegible]

Custom Information

Priority
High

Line of Business
Order Management

AccelQ



Sprint 3 Regression
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Details | Scenarios (12) | Test Cases (18) | Actions (15)

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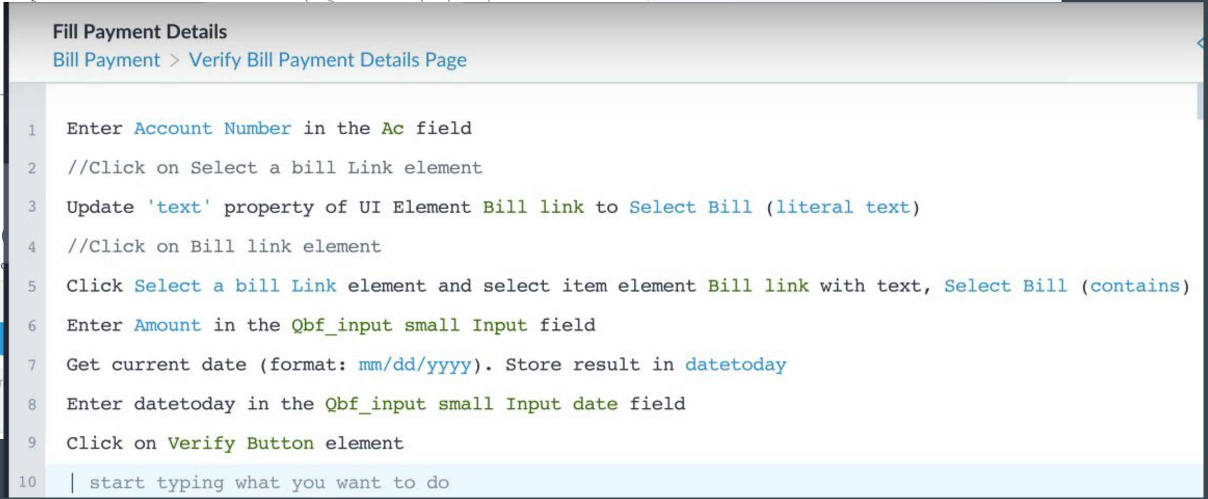

Fill Payment Details
Bill Payment > Verify Bill Payment Details Page

```
Enter Account Number in the Ac field
//Click on Select a bill Link element
Update 'text' property of UI Element Bill link to Select Bill (literal text)
//Click on Bill link element
Click Select a bill Link element and select item element Bill link with text, Select Bill (contains)
Enter Amount in the Qbf_input small Input field
Get current date (format: mm/dd/yyyy). Store result in datetoday
Enter datetoday in the Qbf_input small Input date field
Click on Verify Button element
| start typing what you want to do
```

AutomoniQ

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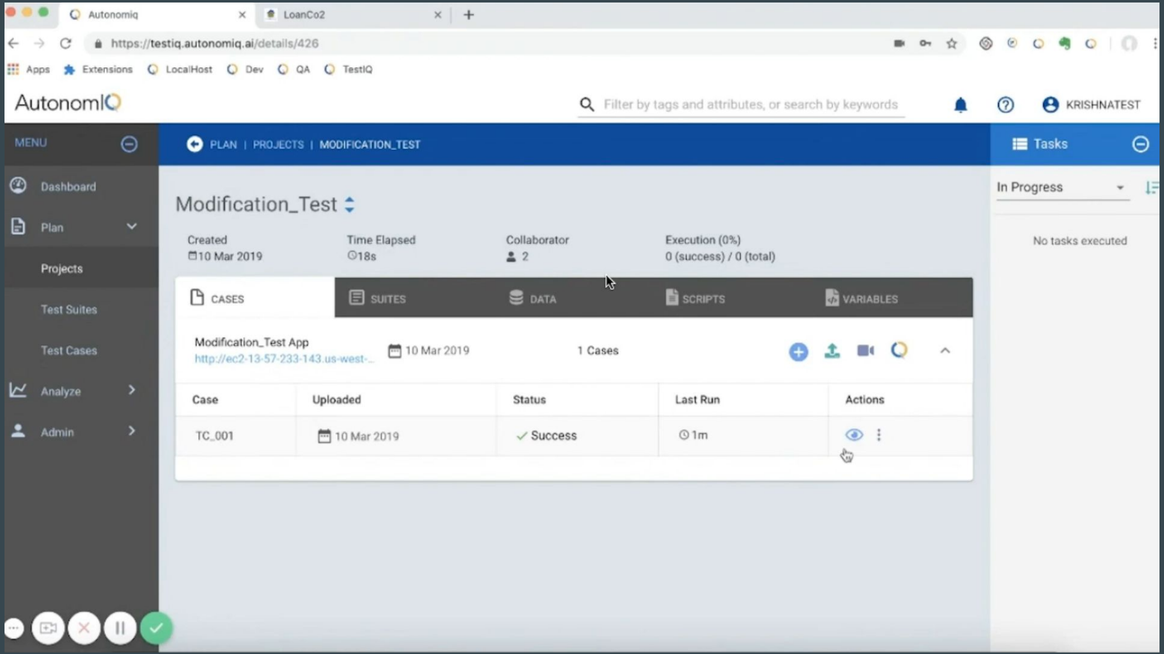

Modification_Test

Created 10 Mar 2019 | Time Elapsed 18s | Collaborator 2 | Execution (0%) 0 (success) / 0 (total)

Modification_Test App http://ec2-13-57-233-143.us-west-... 10 Mar 2019 1 Cases

Case	Uploaded	Status	Last Run	Actions
TC_001	10 Mar 2019	✓ Success	1m	

AIQ Tutorial

Autonomous Test Case Creation and Test Script Generation

FULL

Eggplant

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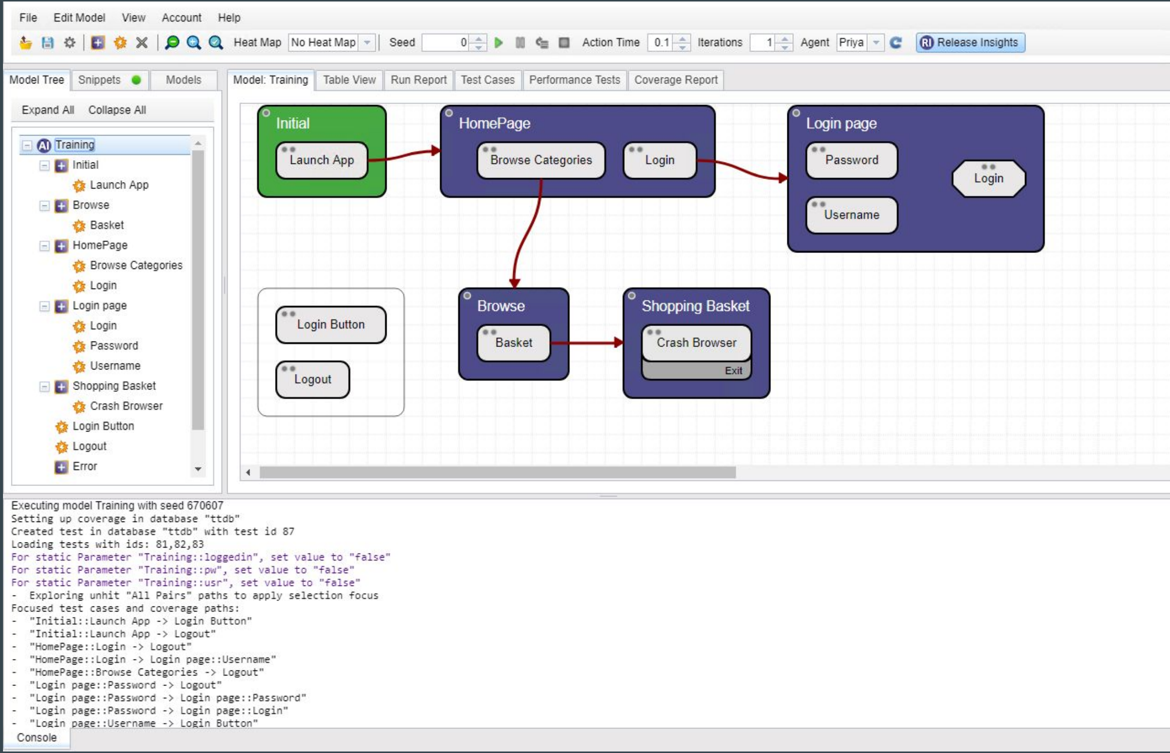

```
Executing model Training with seed 670607
Setting up coverage in database "ttdb"
Created test in database "ttdb" with test id 87
Loading tests with ids: 81,82,83
For static Parameter "Training::loggedin", set value to "false"
For static Parameter "Training::pw", set value to "false"
For static Parameter "Training::usr", set value to "false"
-  Exploring unhit "All Pairs" paths to apply selection focus
Focused test cases and coverage paths:
-  "Initial::Launch App -> Login Button"
-  "Initial::Launch App -> Logout"
-  "HomePage::Login -> Logout"
-  "HomePage::Login -> Login page::Username"
-  "HomePage::Browse Categories -> Logout"
-  "Login page::Password -> Logout"
-  "Login page::Password -> Login page::Password"
-  "Login page::Password -> Login page::Login"
-  "Login page::Username -> Login Button"
```

eggPlant

Lesson 2

How to script: Part 1

Mabl

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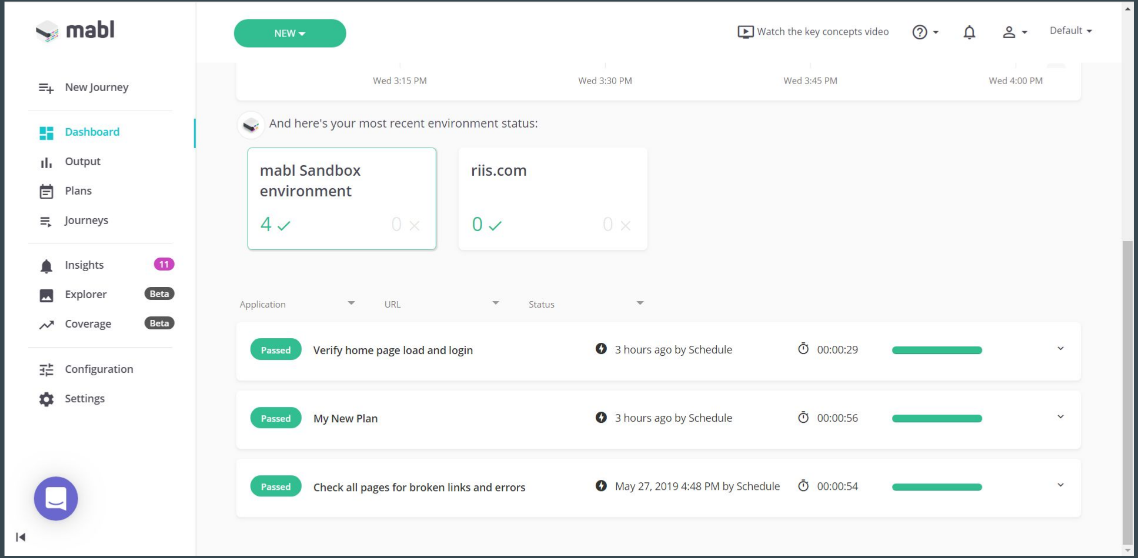

And here's your most recent environment status:

mabl Sandbox environment	4 ✓ 0 ×
riis.com	0 ✓ 0 ×

Passed	Verify home page load and login	3 hours ago by Schedule	00:00:29
Passed	My New Plan	3 hours ago by Schedule	00:00:56
Passed	Check all pages for broken links and errors	May 27, 2019 4:48 PM by Schedule	00:00:54

mabl
quick overview

Test.ai

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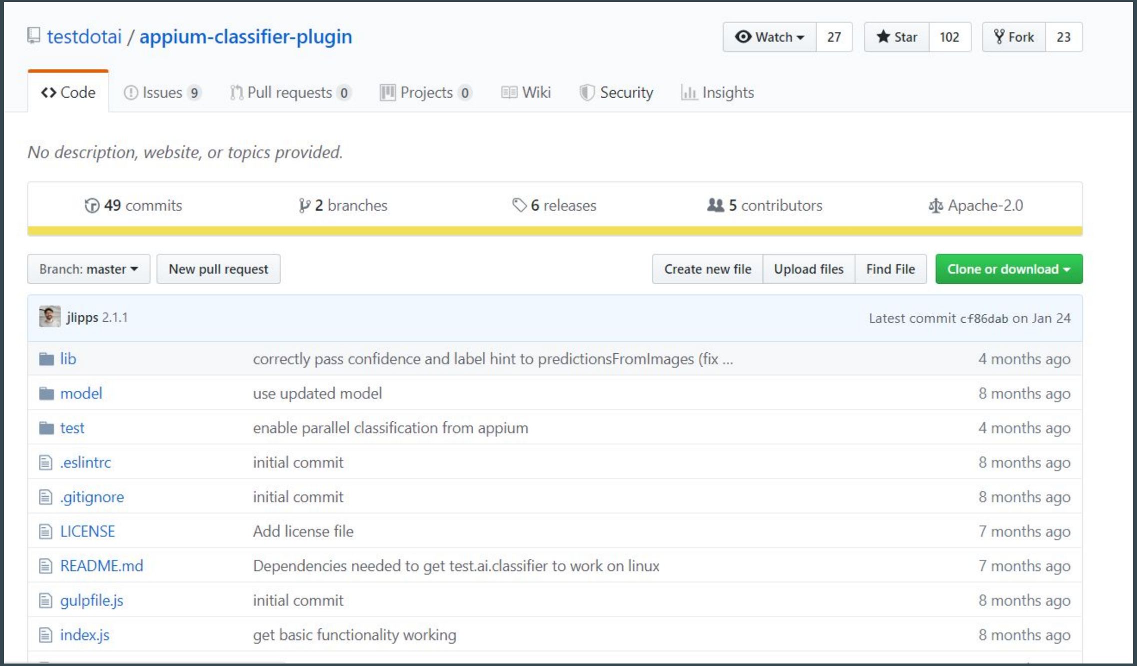


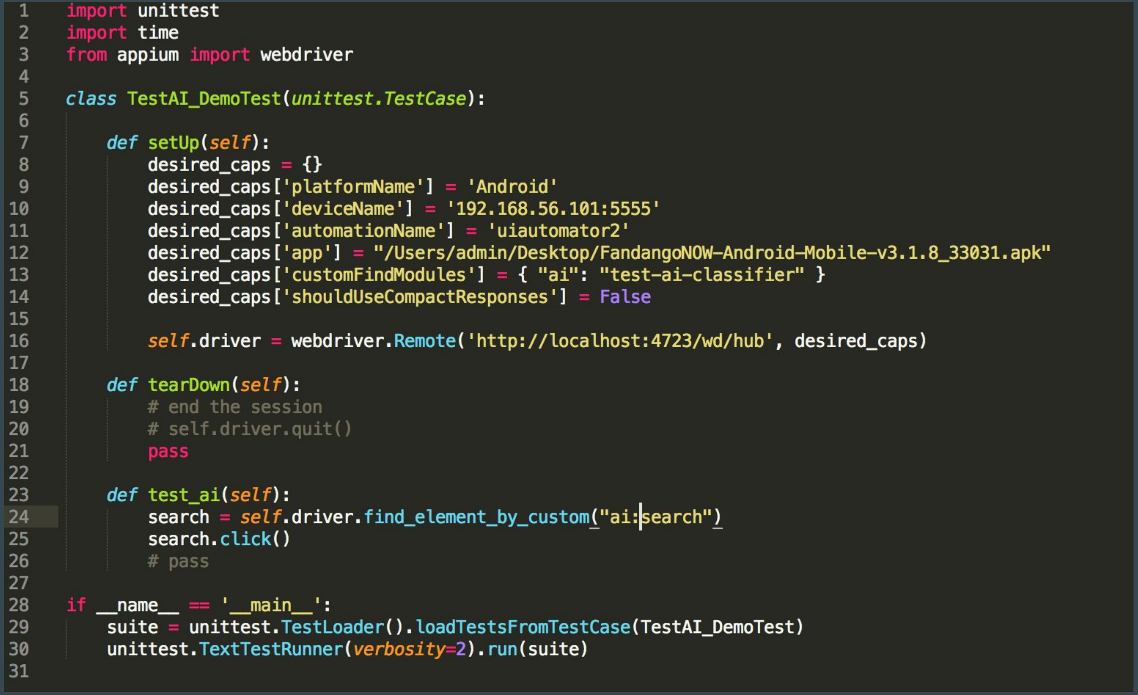
No description, website, or topics provided.

49 commits | 2 branches | 6 releases | 5 contributors | Apache-2.0

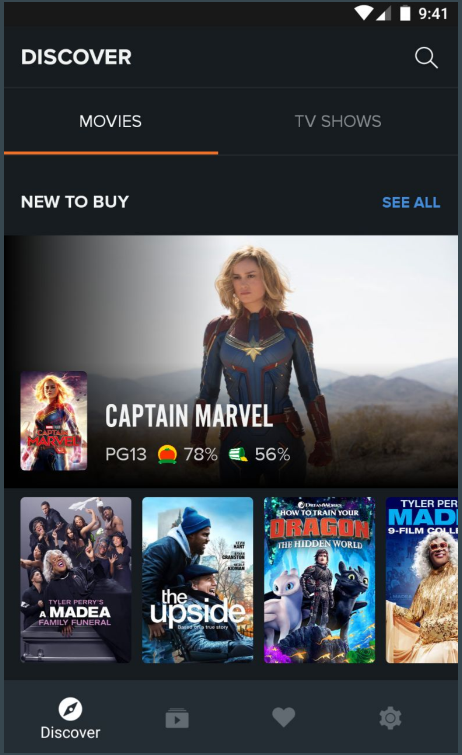
jlipps 2.1.1 — Latest commit cf86dab on Jan 24

lib	correctly pass confidence and label hint to predictionsFromImages (fix ...	4 months ago
model	use updated model	8 months ago
test	enable parallel classification from appium	4 months ago
.eslintrc	initial commit	8 months ago
.gitignore	initial commit	8 months ago
LICENSE	Add license file	7 months ago
README.md	Dependencies needed to get test.ai.classifier to work on linux	7 months ago
gulpfile.js	initial commit	8 months ago
index.js	get basic functionality working	8 months ago

Test.ai demo



```python
import unittest
import time
from appium import webdriver

class TestAI_DemoTest(unittest.TestCase):

    def setUp(self):
        desired_caps = {}
        desired_caps['platformName'] = 'Android'
        desired_caps['deviceName'] = '192.168.56.101:5555'
        desired_caps['automationName'] = 'uiautomator2'
        desired_caps['app'] = "/Users/admin/Desktop/FandangoNOW-Android-Mobile-v3.1.8_33031.apk"
        desired_caps['customFindModules'] = { "ai": "test-ai-classifier" }
        desired_caps['shouldUseCompactResponses'] = False

        self.driver = webdriver.Remote('http://localhost:4723/wd/hub', desired_caps)

    def tearDown(self):
        # end the session
        # self.driver.quit()
        pass

    def test_ai(self):
        search = self.driver.find_element_by_custom("ai:search")
        search.click()
        # pass

if __name__ == '__main__':
    suite = unittest.TestLoader().loadTestsFromTestCase(TestAI_DemoTest)
    unittest.TextTestRunner(verbosity=2).run(suite)
```



Testim

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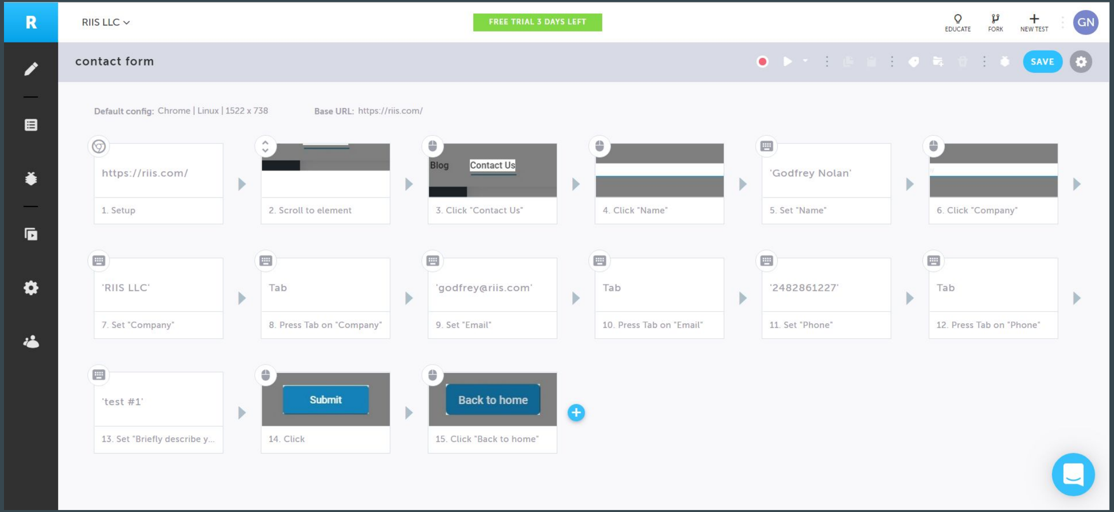
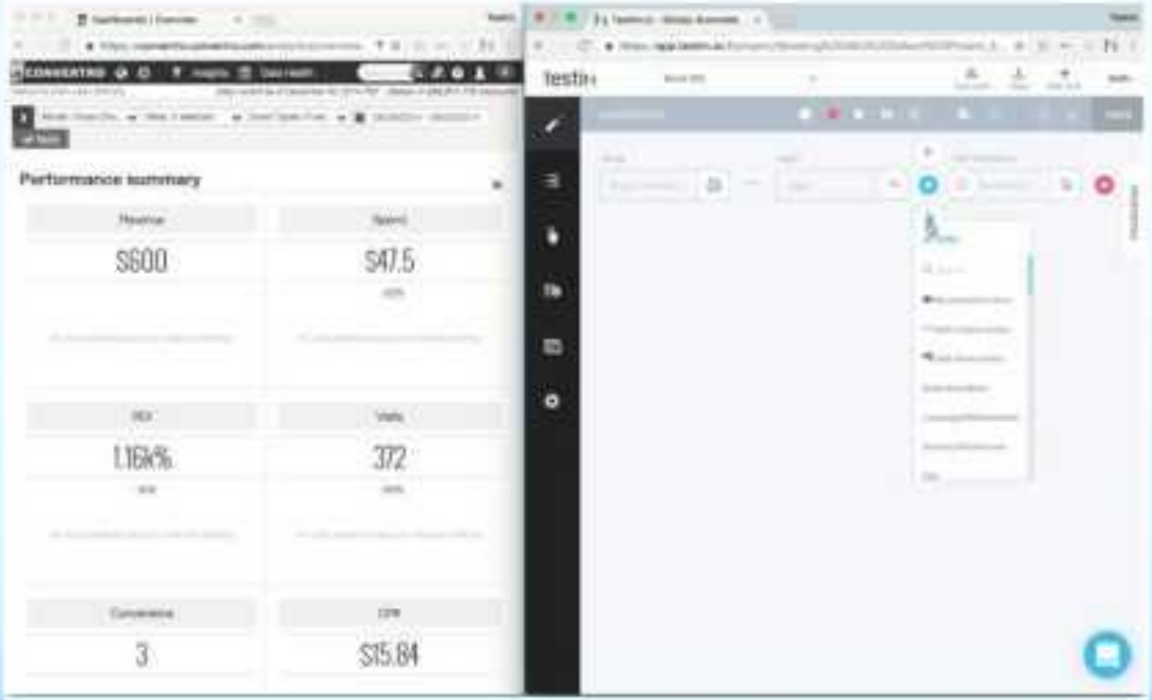


contact form

Default config: Chrome | Linux | 1522 x 738 Base URL: https://riis.com/

https://riis.com/				'Godfrey Nolan'	
1. Setup	2. Scroll to element	3. Click "Contact Us"	4. Click "Name"	5. Set "Name"	6. Click "Company"
'RIIS LLC'	Tab	'godfrey@riis.com'	Tab	'2482861227'	Tab
7. Set "Company"	8. Press Tab on "Company"	9. Set "Email"	10. Press Tab on "Email"	11. Set "Phone"	12. Press Tab on "Phone"
'test #1'					
13. Set "Briefly describe y...	14. Click	15. Click "Back to home"			



CONVERTRO

Performance summary

Revenue	Spend
$600	$47.5
ROI	Visits
1.16k%	372
Conversions	CPA
3	$15.84

Sapienz

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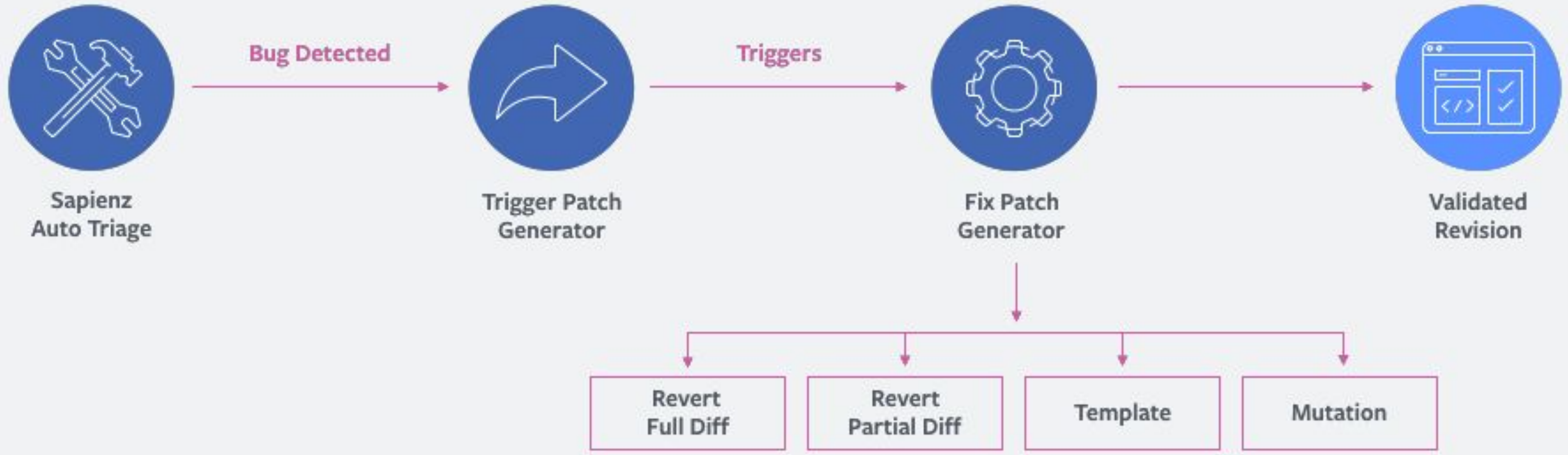
Workflow (Generation)



Categories of Testing tools

- NLP
- Auto Generate tests
- Unit tests only
- Enhanced version of Selenium
- Low code
- Limited number apps
- Test management tool
- XPATH helper tools

And the winner is….

test.ai

Conclusion

Resources

How to apply AI to testing by Jeremias Rößler

https://www.gartner.com/doc/reprints?id=1-5U7BFII&ct=181120&st=sb

https://www.youtube.com/watch?v=EcTmKXdYvtM

https://github.com/testdotai/appium-classifier-plugin

https://www.kaggle.com/testdotai/common-mobile-web-app-icons

AI for element selection - Jason Arbon

http://testerstories.com/

https://david.rothlis.net/testdotai-appium-plugin/

https://code.fb.com/developer-tools/finding-and-fixing-software-bugs-automatically-with-sap
fix-and-sapienz/

https://www.meetup.com/Software-Testing-Meetup-Bern/events/257970496/