

中国DevOps社区峰会 2024 · 上海

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源于社区 服务社区

 中国DevOps社区峰会 2024 · 上海



CI 中移动应用兼容性大规模真机验证实践

亚马逊云科技 祝小伟 Industry Builder

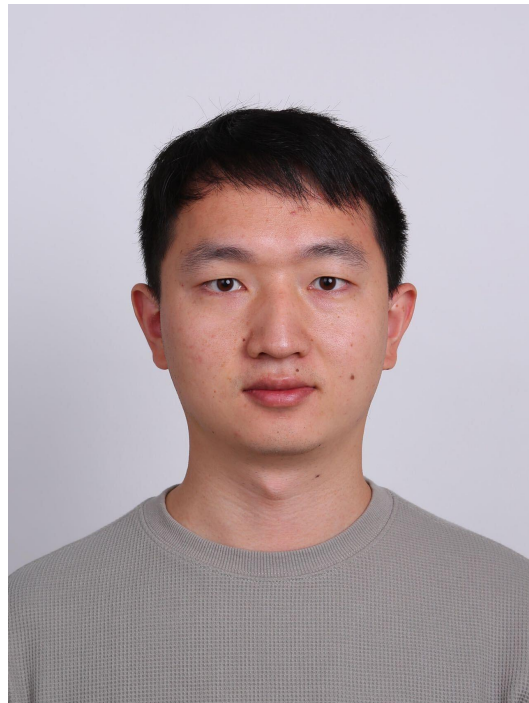




祝小伟

亚马逊云科技 Industry Builder

- 在移动应用开发领域已有近10年的经验，尤其对 Android 及跨平台应用开发有着独到的见解和研究，同时在移动应用 UI 自动化测试结合云计算方面，持续探索更高效、更可靠的解决方案。





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- 1 App 自动化测试
- 2 Appium 介绍
- 3 AWS Device Farm 云真机测试
- 4 GitHub CI 中集成
- 5 CI 中移动应用测试总结



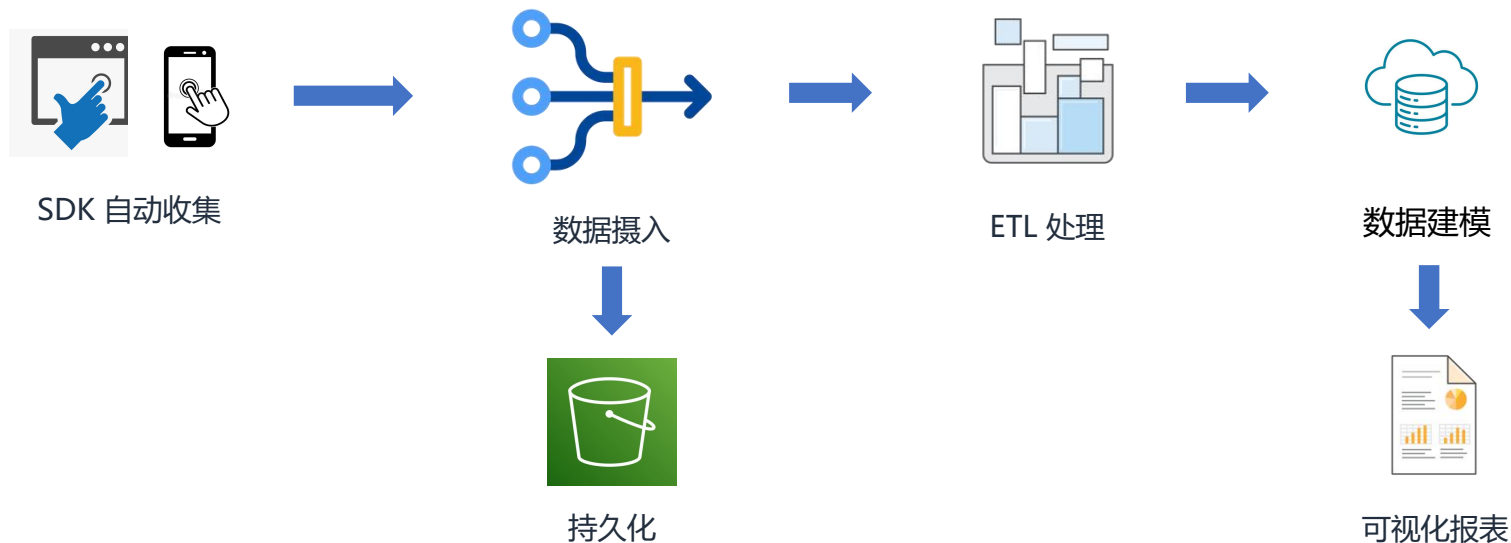


1. App自动化测试

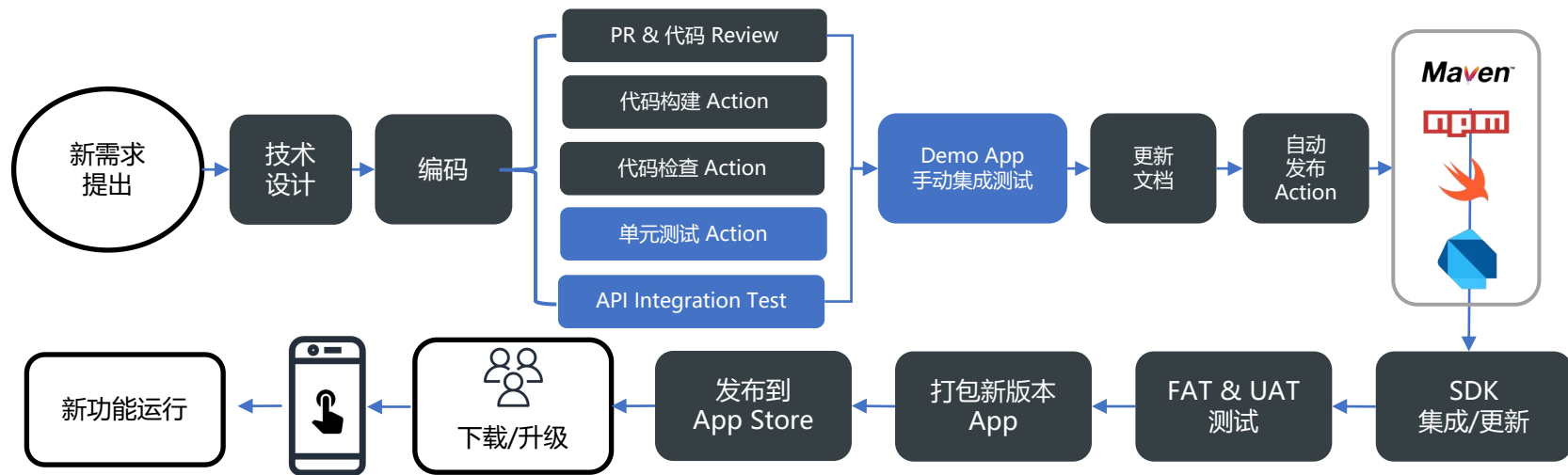
- 从点击流 SDK 真机兼容性测试说起



点击流解决方案



点击流 SDK CI 流程



点击流 SDK 集成测试

▼ clickstream-v1.0.0-uat - aws-gcr-solutions (2)					
● sdk integration- Andriod	MC	N		● clickstream-v1.0.0-uat	
● sdk integration- IOS	MC	N		● clickstream-v1.0.0-uat	
▼ clickstream-v1.1-uat-round2 - aws-gcr-solutions (3)					
● Sdk integration- Andriod 2		Y		● clickstream-v1.1-uat-round2	
○ Sdk integration- Web				● clickstream-v1.1-uat-round2	
● Sdk integration- IOS	MQ	N	je	● clickstream-v1.1-uat-round2	
			Nov 21, 2023		

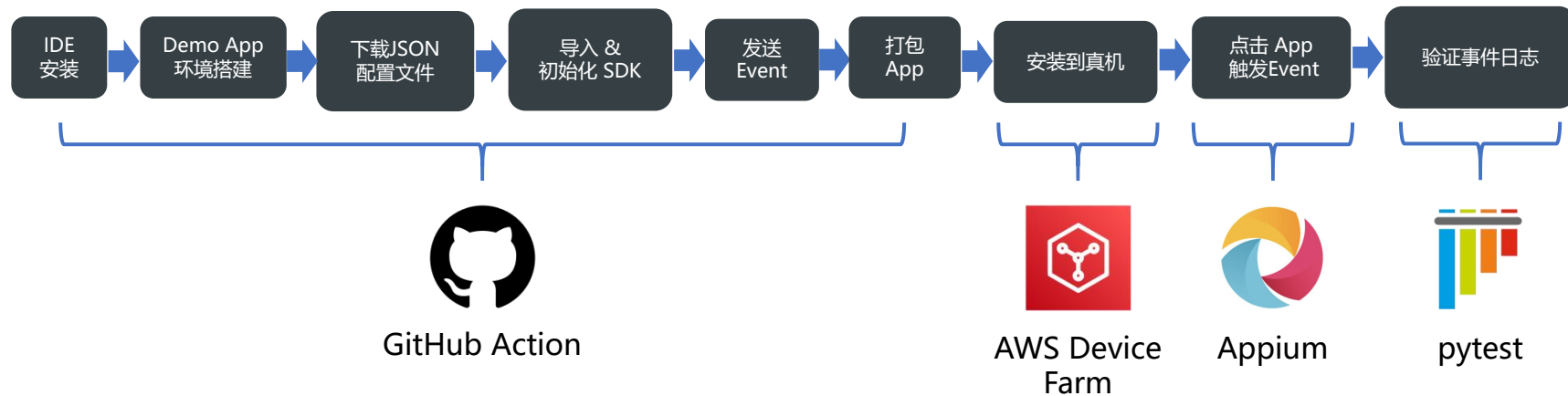
手动集成测试

- 兼容有限的设备
- 很难每次都验证所有的业务场景
- 花费大量时间



如何在真机上自动化完成?

点击流 SDK





Appium 介绍

- Appium 介绍
- Appium Inspector 使用演示
- Python 测试脚本编写



Appium



Appium 旨在支持多种不同平台（移动、网页、桌面等）的UI自动化。不仅如此，它还致力于支持使用不同编程语言（JavaScript、Java、Python等）编写的自动化代码。



Appium Core

定义核心API



Drivers

实现与特定平台的连接



Clients

实现 Appium 支持不同语言的 API



Plugins

更改或扩展 Appium 的核心功能



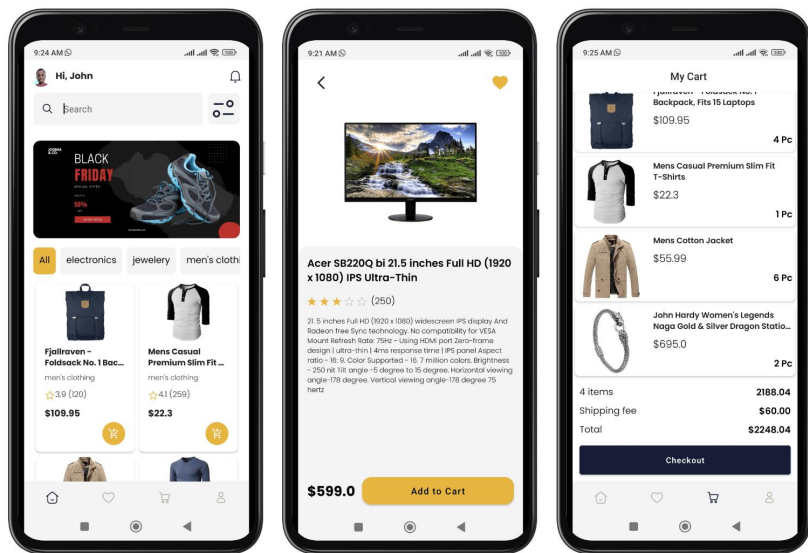


Appium 平台支持

平台	Driver 名称	支持方
Android classical UI	Uiautomator2	Appium
Android compose UI	Espresso	Appium
iOS	XCUITest	Appium
Flutter	Flutter	Community
Web	Chromium/Gecko	Appium
Windows	Windows	Community/ Microsoft
MacOS	Mac2	Appium



Android 购物 App



✓ Advanced Tech Stack

- Kotlin
- Jetpack Compose UI
- View Model
- Live Data
- [Fake Store API](#)

Joomia Android App

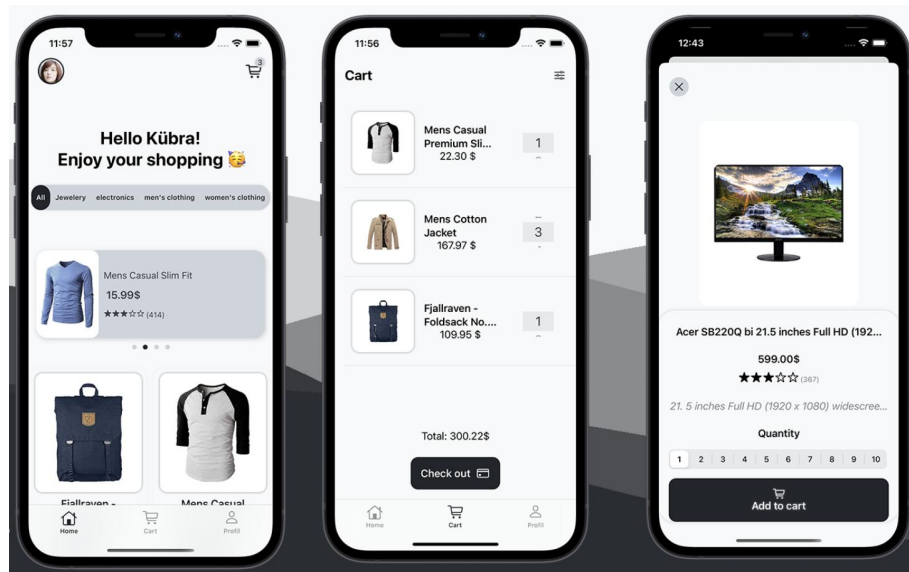


iOS 购物 App



✓ Advanced Tech Stack

- Swift
- Swift UI
- MVVM
- [Fake Store API](#)



ModerneShopping iOS App

开源示例 App

aws-samples / clickstream-sdk-samples

Code Issues Pull requests Discussions Actions Projects Wiki Security 12 Insights Settings

clickstream-sdk-samples Public

2 main 2 Branches 0 Tags

zhu-xiaowei and xiaowei ci: update profile to shopping (#19) 14d8a4 · 3 weeks ago 17 Commits

android	feat: integrate Clickstream Android SDK (#6)	last month
ios	ci: update profile to shopping (#19)	3 weeks ago
react-native	feat: upgrade yarn version and fix react-native-reanimate...	last month
web	feat: add web sdk example (#12)	last month
.gitignore	feat: add original android, ios, react-native sample apps (...)	last month
CODE_OF_CONDUCT.md	Initial commit	last month
CONTRIBUTING.md	Initial commit	last month
LICENSE	Initial commit	last month
README.md	feat: add web sdk example (#12)	last month

README

Code of conduct

MIT-0 license

Security

Clickstream SDK Samples

Welcome to the Clickstream SDK Samples repository, a collection of sample applications demonstrating the integration of the Clickstream SDK on various platforms - Android, iOS, React Native, and more.

Overview

The Clickstream SDK is part of an AWS solution - [Clickstream Analytics on AWS](#), which provisions data pipeline to ingest and process event data into AWS services such as S3, Redshift.

Getting Started

Clone this repository and dive into individual platform directories for comprehensive instructions on integrating the Clickstream SDK into your projects. Whether you're developing for Android, iOS, or React Native, these examples serve as valuable resources to kickstart your journey with Clickstream Analytics on AWS.

We look forward to seeing the insightful ways you leverage Clickstream for enhanced event tracking and analytics in your applications!

Android SDK Example

Android example app Joomla shopping app is forked from <https://github.com/oeikany/Joomla>. To get started with the Android example, refer to the [Android Example README](#).

You can refer this [PR](#) to learn how to integrate Clickstream Android SDK.

More references:

About

Clickstream SDK samples, including Android, iOS, React Native

[aws.amazon.com/solutions/implement...](#)

[sdk](#) [sdk-android](#) [clickstream](#) [sdk-swift](#) [sdk-react-native](#) [aws-clickstream-solution](#)

Readme

MIT-0 license

Code of conduct

Security policy

Activity

Custom properties

5 stars

13 watching

1 fork

Report repository

Contributors

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amazon-auto Amazon GitHub Autom...

Languages

TypeScript 51.7%

Kotlin 25.1%

Swift 13.5%

JavaScript 3.5%

Java 2.4%

Vue 1.8%

Other 2.0%

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Appium 本地演示





AWS Device Farm 云真机测试

- Device Farm 介绍
- 界面手动运行
- CI 中自动运行



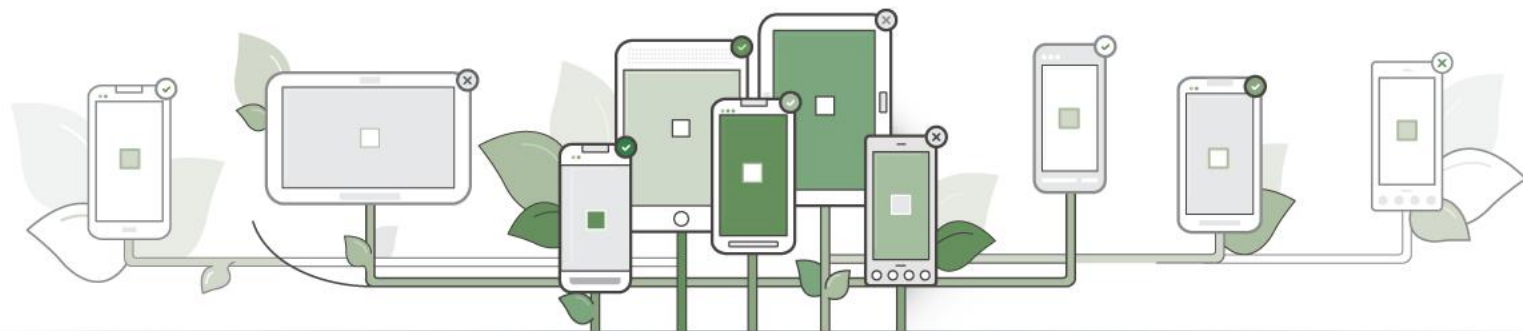
Device Farm 介绍

通过在亚马逊云服务中托管的真实移动设备及各种桌面浏览器上进行测试
从而提高您的移动应用程序质量



✓ 真机测试

- 自动化测试
 - 模糊测试
 - Appium/ Espresso/Robotium/XCTest
- 远程真机访问





Device Farm 可用设备

平台	Android	iOS
数量	93	64
厂商	Samsung, Google, LG, Xiaomi, Sony	Apple iPhone 6s – iPhone15
OS 版本	8–14	13.5–17.5
平板支持	Samsung Galaxy Tab S4-S9 Tab A, A7-A8	iPad 7-9th iPad mini 5-6th iPad Pro 2020-2022 iPad Air 2th, 4th, 2022

数据截止到 2024/10/19



使用 Device Farm 优势



真机测试优势

- 无需预置和管理任何测试基础设施
- 快速使用与您客户相同的设备进行测试
- 快速复现并修复问题
- 提供多种语言 SDK，易于与您现有的开发流程集成



价格 (us-west-2)

- 每个账户一次性 1000 分钟的免费使用时长
- \$0.17 /设备/分钟
- \$250 /插槽/月
- \$200 /私有设备/月





AWS Device Farm 演示



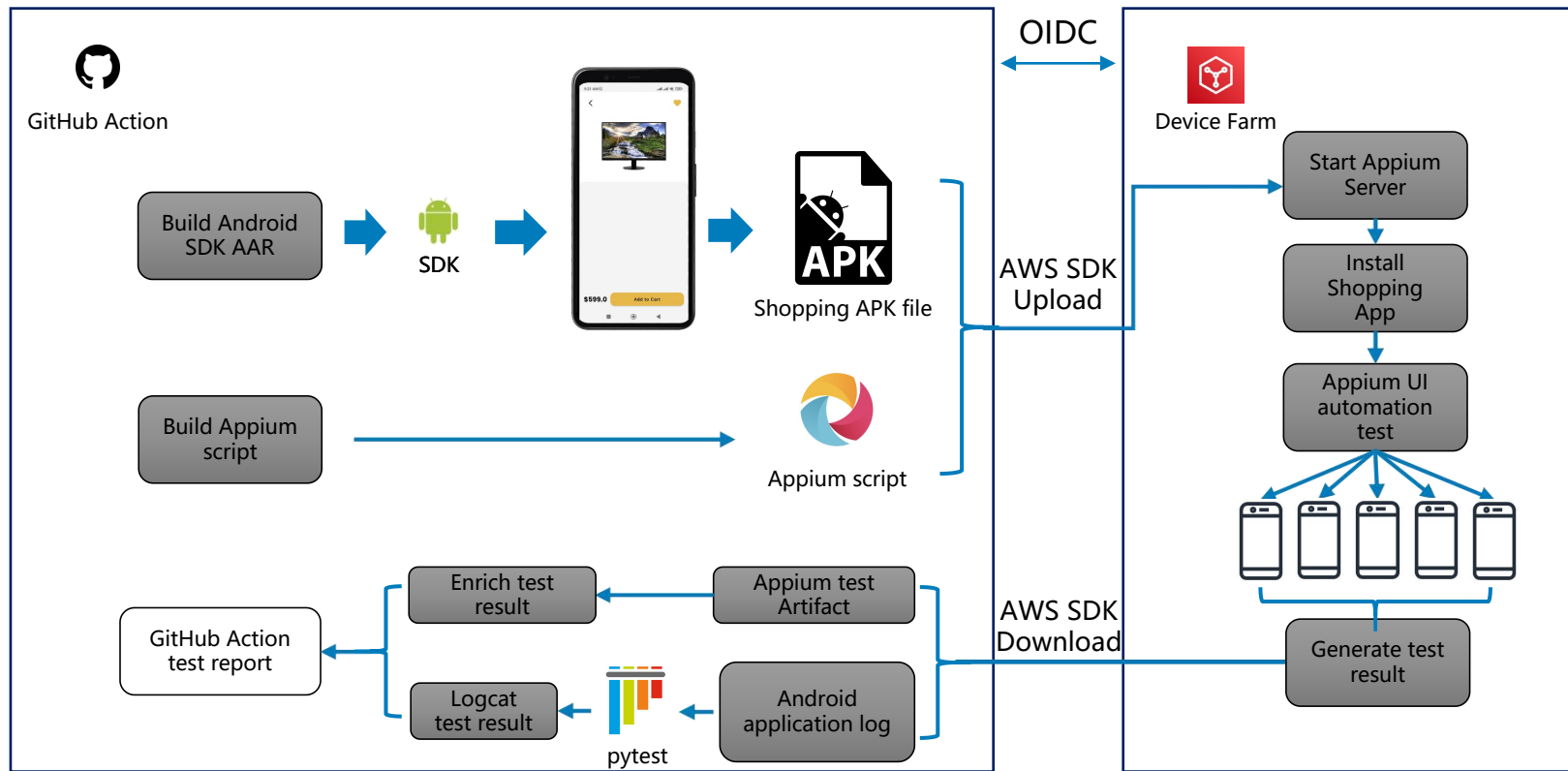


GitHub CI 中集成

- 流程介绍
- 效果展示



点击流 SDK GitHub CI 中大规模兼容性自动化测试流程



GitHub Release Action



release: clickstream Android 0.11.0 #66

zhu-xiaowei wants to merge 1 commit into [main](#) from [release_8.11.0](#)

Conversation 1 · 1 commit · 5 checks · 2 files changed · +2 -2

zhu-xiaowei commented 28 minutes ago

PR title and description conform to [Pull Request](#) guidelines.

Description of changes:

1. release: clickstream Android 0.11.0

Documentation update required?

☐ No

☒ Yes (Please include a PR link for the documentation update)

By submitting this pull request, I confirm that my contribution is made under the terms of the Apache 2.0 license.

release: clickstream Android 8.11.0 ✓ 81321f8

zhu-xiaowei added the [release](#) label 28 minutes ago

codecov-commenter commented 26 minutes ago

Codecov Report

All modified and coverable lines are covered by tests ✓

Project coverage is 87.26%. Comparing base [[36c88dc](#)] to head [[81321f8](#)]

► Additional details and impacted files

[View full report in Codecov by Sentry](#)

[Is there feedback on the report? Share it here.](#)

Add more commits by pushing to the [release_8.11.0](#) branch on [awslabs/clickstream-android](#)

Review required

At least 1 approving review is required by reviewers with write access. [Learn more about pull request reviews](#)

No unresolved conversations

There aren't yet any conversations on this pull request. [View](#)

All checks have passed

Hide all checks

6 successful checks

- ✓ **Android SDK Build / build (pull_request)** Successful in 3m [Required](#) [Details](#)
- ✓ **Commit Title List / lint (pull_request)** Successful in 2s [Required](#) [Details](#)
- ✓ **Integration Test / test (pull_request)** Successful in 18m [Required](#) [Details](#)
- ✓ **Run Code coverage / build (pull_request)** Successful in 2m [Required](#) [Details](#)
- ✓ **Run Code coverage / JUnit Test Report (pull_request)** — 160 tests run, 158 passed, 2 skipped, 0 f... [Details](#)
- ✓ **action-semantic-pull-request** — Ready for review & merge. [Details](#)



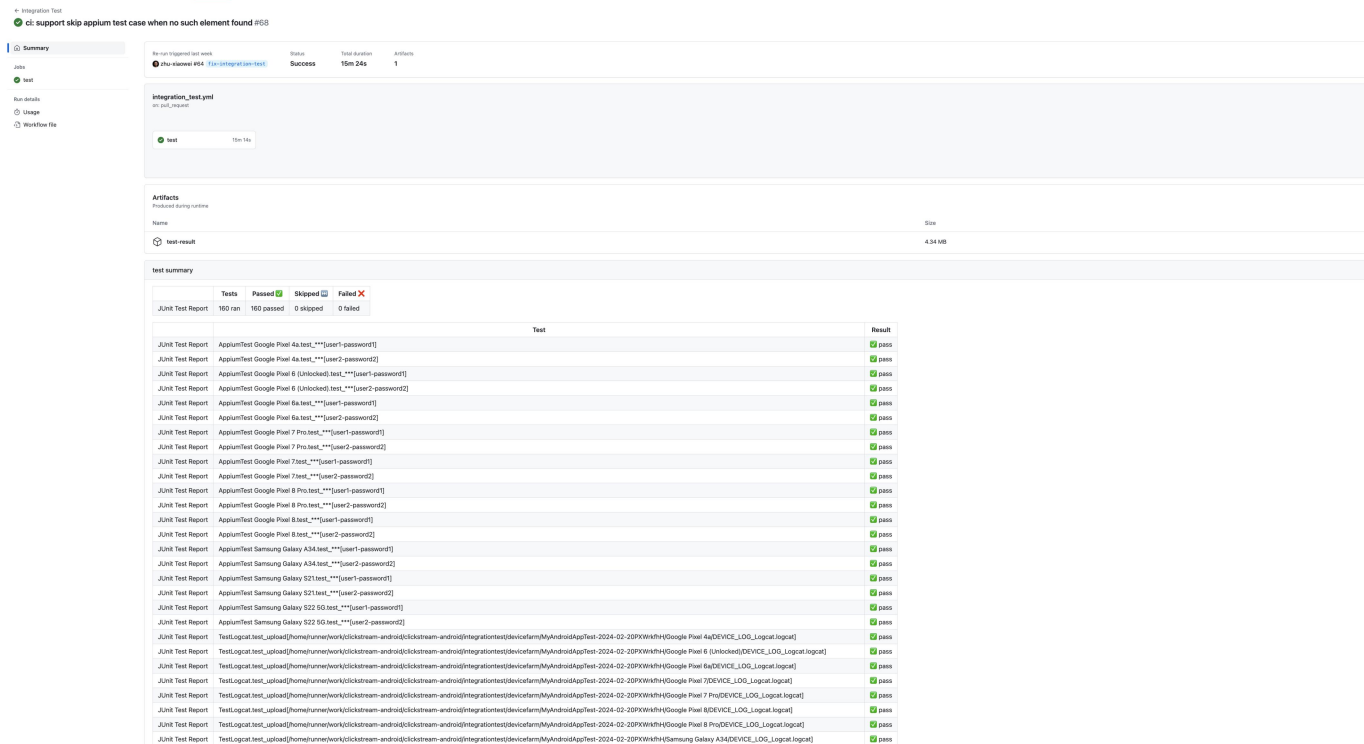
[integration_test.yml](#)



[integration_test.yml](#)



GitHub CI 中的集成测试报告





CI 中移动应用测试总结

- App UI 自动化测试心得
- CI 中 App 自动化测试总结





App UI 自动化测试心得



1. 在 CI 中使用固定的 Appium server, driver, python 版本。
2. 测试脚本中合理的使用显示和隐式等待。
3. 尽量通过 ID 或者 android_uiautomator 进行元素的查找, 避免使用 XPath。
4. 使用 PageObject 模式来提高代码的可维护性和重用性。
5. 可以在 CI 中通过自定义脚本, 在打包前临时修改 App 的行为来测试特定场景。
6. 将 UI 自动化测试与 CI/CD 集成, 每次 PR 都触发测试, 可实现大规模兼容性验证。





CI 中 App 自动化测试总结



- 稳定性是移动应用 UI 测试的基础。
- 可以通过大规模真机验证来节省集成测试时间，并提高代码的稳定性和质量。
- 稳定性，兼容性的提升可以显著改善应用程序的体验，从而赢得您用户的信任。



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THANKS

