T5
Bot Testing/Testing Bots
Thursday, May 3rd, 2018
9:45 AM

Automated Testing for New-Gen Digital Interactions: Chatbots, Alexa, and Siri

Presented by:

Sanil Pillai

Infostretch

Brought to you by:

350 Corporate Way, Suite 400, Orange Park, FL 32073
888-268-8770 ⋅ 904-278-0524 - info@techwell.com - http://www.stareast.techwell.com/

Sanil Pillai

Infostretch

Director of Infostretch Labs Sanil Pillai is an experienced engineering leader for digital and enterprise applications. He has built and managed both offshore and onsite engineering teams, managed mobile projects for Fortune 500 clients, and has deep technical and functional expertise. At Infostretch, Sanil has established agile development and continuous integration methodologies, tracking metrics, and monitoring processes to ensure continuous improvement in the development organization.

infostretch

Automated Testing for New-Gen Digital Interactions: Chatbots, Alexa, and Siri

Sanil Pillai | Director of Infostretch Labs

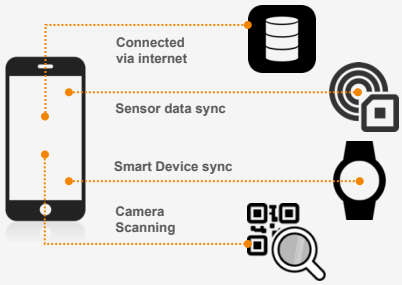
Welcome

1. The Hyper Connected World
   - Past Apps vs Current Apps
   - Omni Channel Offerings by Enterprise
2. Channel | Mobile App
   - Mobile App Test Automation Challenges
   - Mobile App Testing Strategies
3. Channel | Bots
   - Nuances of Bot Testing
   - Automate Testing of Chat Bot
   - Automate Testing of Voice Bot

Past Apps vs Current Apps

Standalone App or Limited Connected App

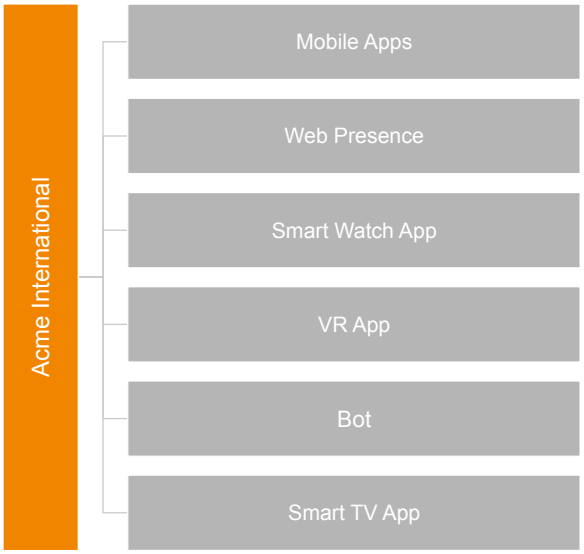
Hyper Connected App



infostretch

 4

Omni Channel Offerings by Enterprises



infostretch

 5

App Connected with BLE Smart Device

Peripheral Devices or Triggers

Syncing Data with BLE Smart Device

- Connect, Disconnect, Broadcast, etc.
- Sync Data
- Determine certain actions

Image Source: http://a.abcnews.com/images/Technology/abc_jawbone_up_wristband_app_ll_130812_16x9_992.jpg

infostretch

 6

App extracting text from image

Peripheral Devices or Triggers

Using Mobile Camera Scanning Book

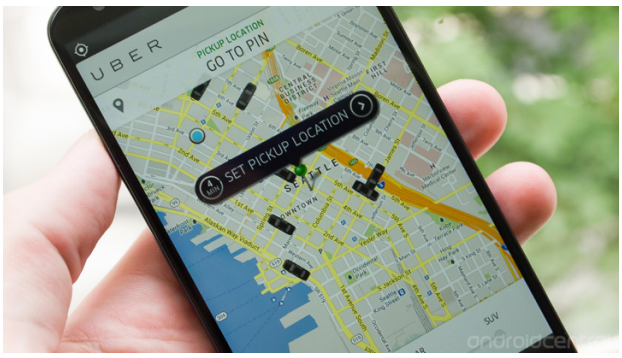
- Intelligent Image Capturing Algorithm
- OCR enabled

Image Source: https://www.leadtools.com/blog/wp-content/uploads/2017/06/mobile-ocr-app-in-action.jpg

infostretch

App Determining Location & Triggering Actions

Peripheral Devices or Triggers



Using Mobile Device Location

- Current Location
- Map rendering
- Identify nearest object & notify (e.g. Cab)

Image Source: https://www.androidcentral.com/sites/androidcentral.com/files/styles/xlarge/public/postimages/444537/uber-app.jpg

infostretch

App Relying on Device Locale for Date & Time

Peripheral Devices or Triggers

Image Source: http://www.flightswatcher.com/wp-content/uploads/2017/08/tripit-user.png

Notifying Relevant Info to Customer

- Get Device Local Date & Time
- Determine and trigger notification for user's action

infostretch

App Relying on Biometric Authentication

Peripheral Devices or Triggers

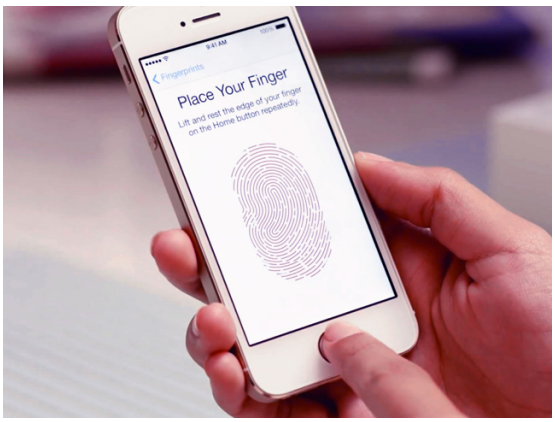


Image Source: https://www.imore.com/sites/imore.com/files/styles/larger/public/field/image/2013/09/iphone_5s_touch_id_fingerprint_video_hero_4x3.jpg?itok=bhma0a7k

Authenticate User & Provide Info

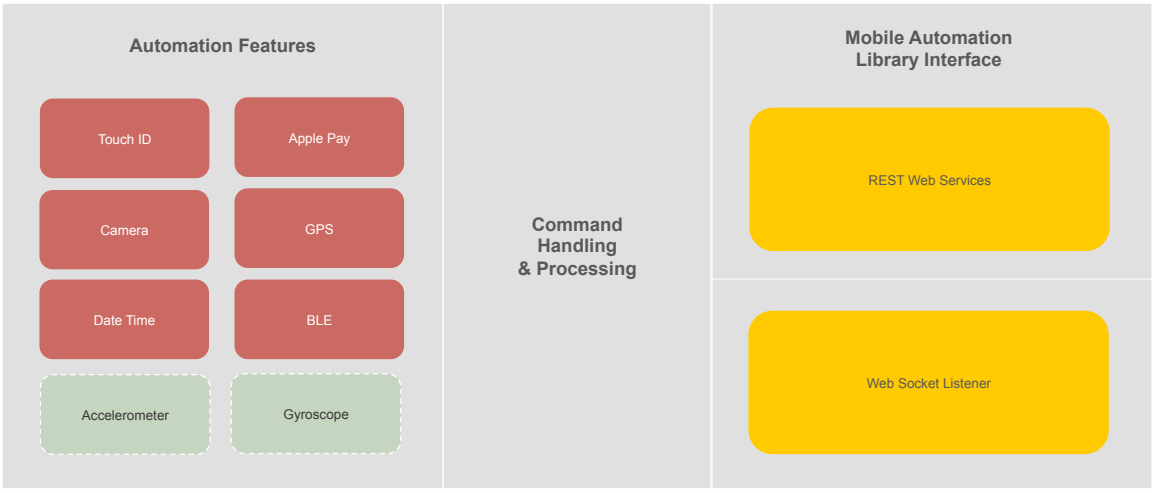
- Fingerprint Scanning
- Authenticate & Trigger Action

infostretch

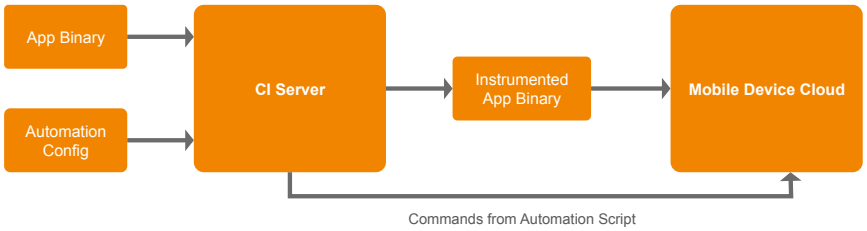
Mobile App Test Automation Challenges

- Existing popular tools like Appium do not support automation of device hardware testing (Camera, TouchID)
- Hardware level access for automation necessitates the need for code level instrumentation
- Testing use cases around interruptions are important but complex.

Automation Library Approach



Automation Approach



infostretch

 13

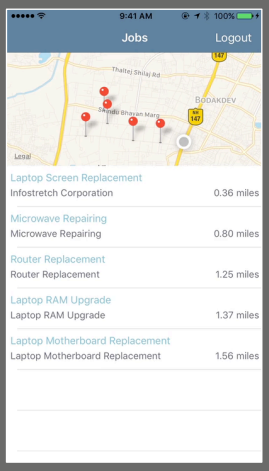
Use Case: Automate the testing of location

- A field staff needs to initiate the job that is assigned to him
- Condition is – person can initiate only if he is actually at that location
- Manual approach is costlier
- Traditional approaches can't spoof the location
- Using Infostretch's Mobile Automation Framework, we can spoof the location based on test data and can verify the scenario in less than 20 secs

infostretch

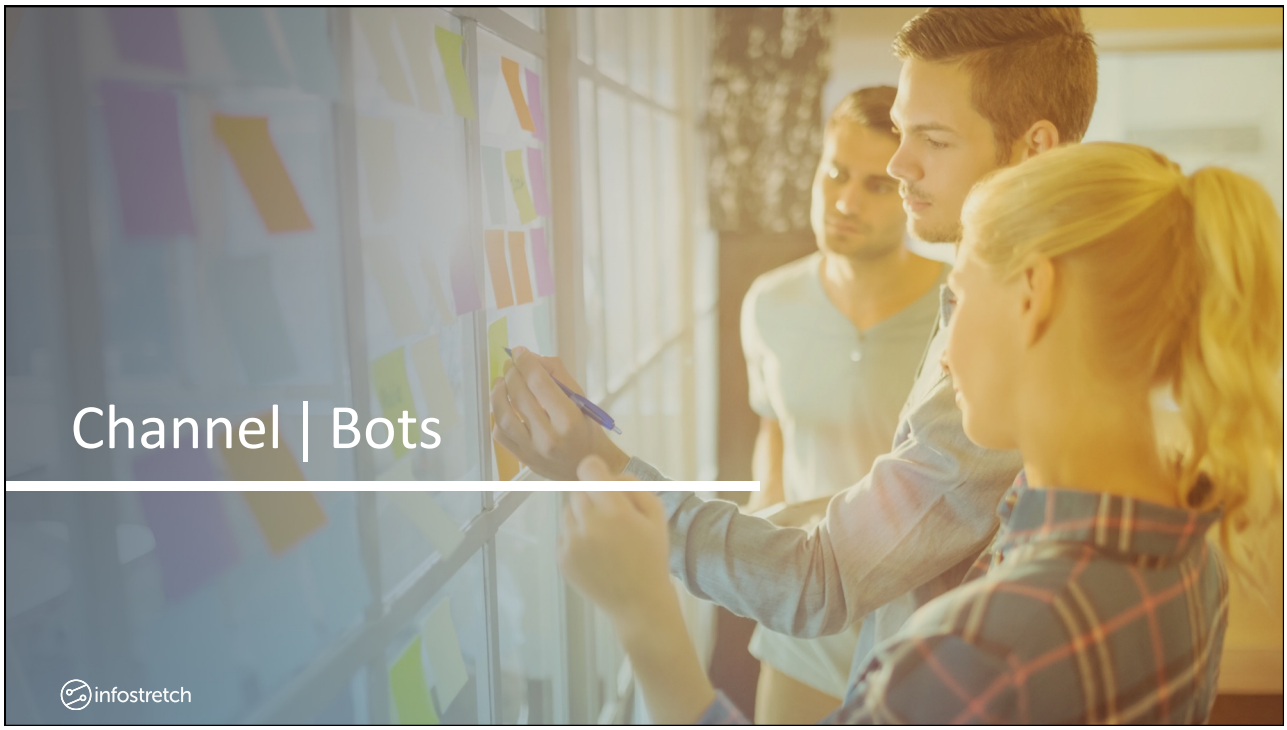
 14

Demo



infostretch

 15



Channel | Bots

infostretch

Types of Bots

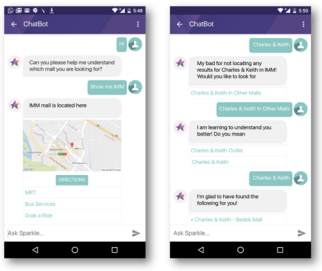


Image Source: https://ncmedia.azureedge.net/ncmedia/2017/11/app-1.png

Chat Bot

Voice Bot

infostretch

Conversational UI

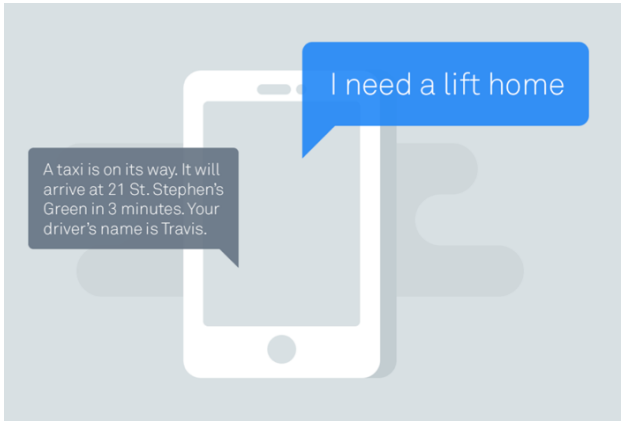


Image Source: https://www.gupshup.io/developer/resources/img/marketecture/comprehensive-integrated-framework.png

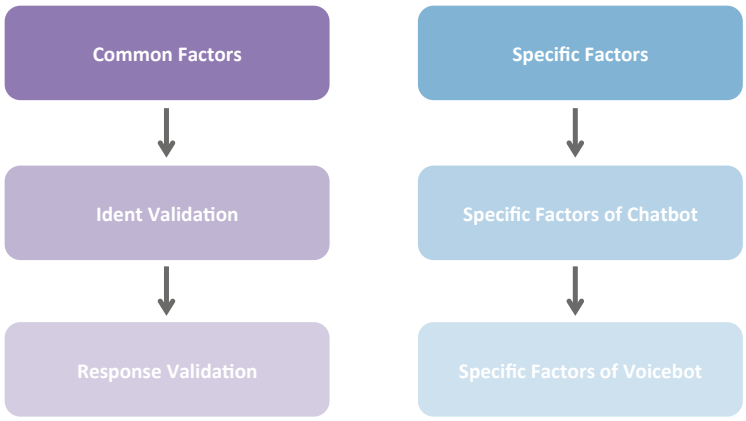
Big shift happening in the industry for the conversational interfaces or Zero UI interfaces.

Need different approach to test

Non-UI elements

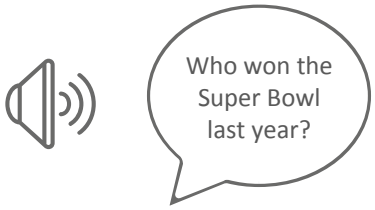
infostretch

Nuances of Bot Testing



infostretch

User's Intent Validation



Intent: Know Winning Team
Team: Winning **Game: Super Bowl** **Year: 2016**

1

User's Intent

User types something or speaks something

Bot understands it

Called as User's Intent Understanding

infostretch

Bot's Response Validation

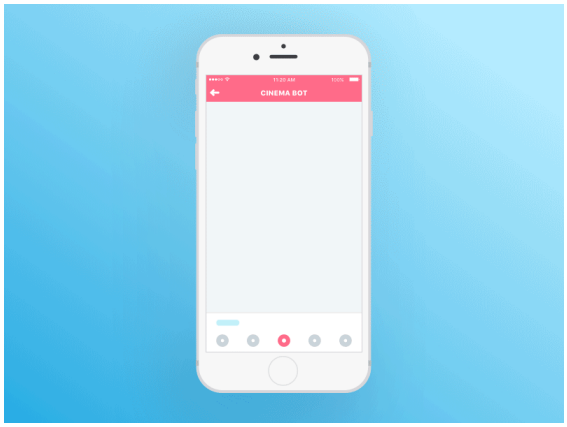


Image Source: https://s-media-cache-ak0.pinimg.com/originals/58/31/1e/58311e3f691d9b4efd5e4d3d96f846b9.gif

2

Bot's Response

Based on Intent understanding, bot can:
- Either call specific web service, or
- Reply based on intelligence embedded in the bot itself

Without user's entry, bot can push information (e.g. Weather updates)

infostretch

 21

Factors to be tested for Chatbot

Different Response – Same Query

Smart bots would react differently to the same query. When a user mentions "thanks" it would reply as – "Welcome" or "My Pleasure" or "No problem"

Response time from bot

How much time your bot is taking to respond back to your user's queries. Timeout defined for the bot response must also be aligned to that during automation

Bot's understanding of intents

Different users asks the same query in different ways. User 1 asks – "Growth of my portfolio" User 2 asks "percentage change in my portfolio"

Multiple Queries in single sentence

How does your bot handles the multiple queries in single statement? User asks – Show me the suspicious transactions value and total loss in 2017

Typo Errors Understanding

How far a bot can understand the the typo error from a user without polluting with other intent.

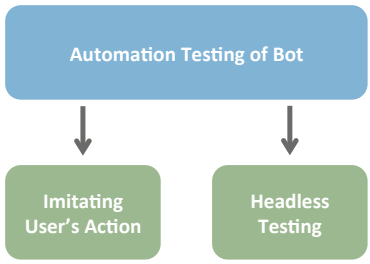
Mixed Languages Query

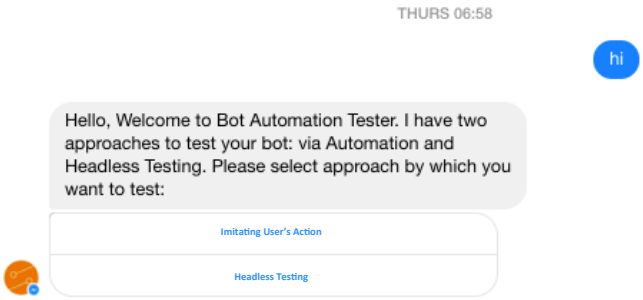
Can your bot understand the multiple languages that has been asked? User may write - Combien avez-vous facturé pour mon POS system?

infostretch

 22

Approaches

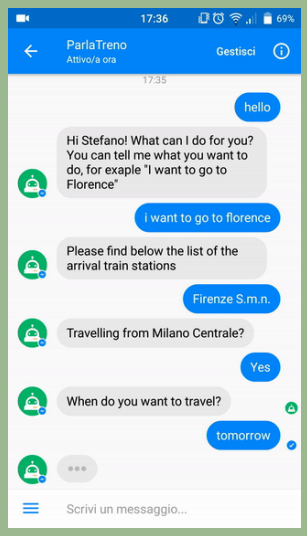




Infostretch's Automation bot testing the "bot under Test"

infostretch

1



Imitating User's Actions

Imitating User's Action - Approach

Upload Test Data using Excel/CSV

- ✓ Infostretch Framework allows to test the bot's flow end-to-end per Test Scenario
- ✓ It imitates user's action and interacts with bot
- ✓ Captures the response of the bot and compares with the response data mentioned in Test Data Excel/CSV

2

Headless Testing

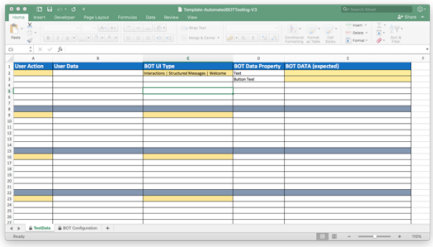
Headless Testing - Approach

Upload Test Data using Excel/CSV

- ✓ Infostretch Framework spoofs and directly connects to bot server of "Bot under Test"
- ✓ User's actions are sent directly bypassing the bot channel
- ✓ Captures the response of the bot and compares with the response data mentioned in Test Data excel/CSV

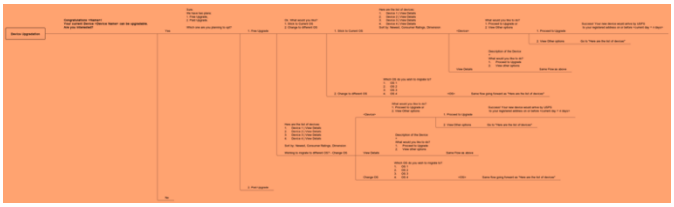
Test Data Options

Upload Test Data using Excel/CSV



Upload Test Data using Excel/CSV

- Create specific format from Mind Map diagram and push into bot Automation Framework
- It helps in **reducing the maintenance time** by managing the requirement changes in mind map itself



infostretch

Automated Testing of Voicebot

Factors to be Tested for Voicebot

Different accents, gender

How does bot behaves for different accents & gender combinations - American female, British Male

Punctuations

How bot interprets the punctuations:
Tools, without any, skill is helpless – vs -
Tools, without any skill is helpless ?

Same meaning different utterance

Yes, yeah, true, exactly, certainly, etc. can be used interchangeably. Bot must understand them.

Background Noise

Check for the effect of noise on the bot's capability to understand user's intent.

Different pronounciations

People often pronounce assessory instead of accessory – does your bot understands the essence of user's intention?

User speaking at distance

Effect of user speaking from distance, or in case of listening device being stationary (e.g. Echo) and user is moving and speaking – how does that impact bot's behavior?

infostretch

 28

Approach

Intent Testing

Ask Automation Bot, Run Test Suite for Diagnosis

Test Suite with Test cases running in sequence

Utterances as input (pre-recorded/run-time generated using third-party TTS API)

Change distance using Turtlebot, add Noise, etc.

infostretch

infostretch

Thank You

Connect With Us

info@infostretch.com

+1-408-727-1100