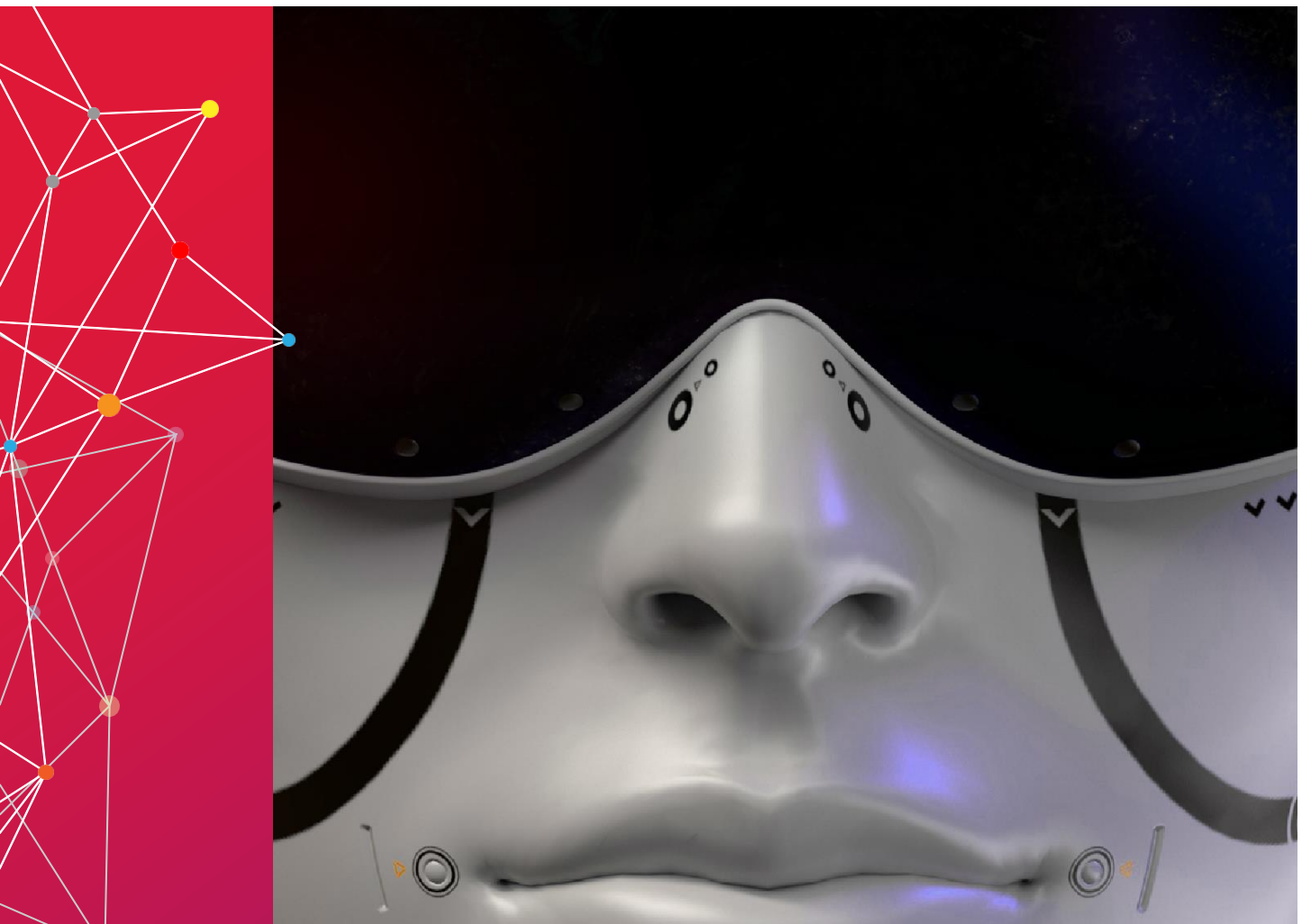


THOUGHT PAPER

# REIMAGINING AI FEATURES TO BOOST TESTING AND AUTOMATION



## Abstract

Artificial intelligence (AI) is a key initiative in software development, testing, analytics, and predictions. Testing enables continuous integration with other third-party tools, while predictive analytics is used to analyze old data and make more accurate predictions about the future performance of the software tests and products.

## Key Takeaways

Most of the times, we use AI, to simulate human intelligence. To achieve this activity, natural language processing (NLP) and machine learning (ML) are required to leverage the features of AI.

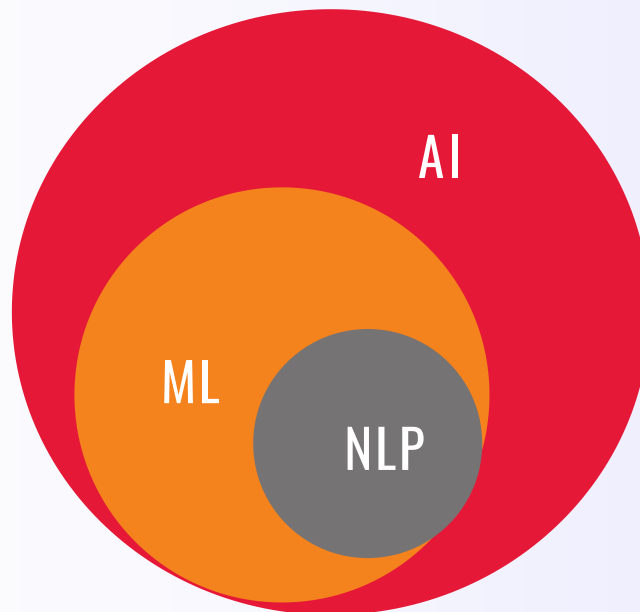


Fig 1

AI is an umbrella, which talks about the machine learning, facial recognition, chatbots, cloud computing, and many more features.

ML helps in building a system that can adapt and learn from the past experiences, it automatically improves its performance and self-learns over a period, without reprogramming.



## Introduction

NLP is a part of ML, which enables us to understand, analyze, and perform tasks by understanding human readable languages. Now, artificial intelligence and machine learning features play a major role in test automation to improve the quality, increase efficiency, and lower our efforts in maintenance tasks.

We can define a testing strategy for test automation using machine learning and its features, which would help testers to prepare an unbreakable, automated script(s) with near zero maintenance efforts, as shown below.

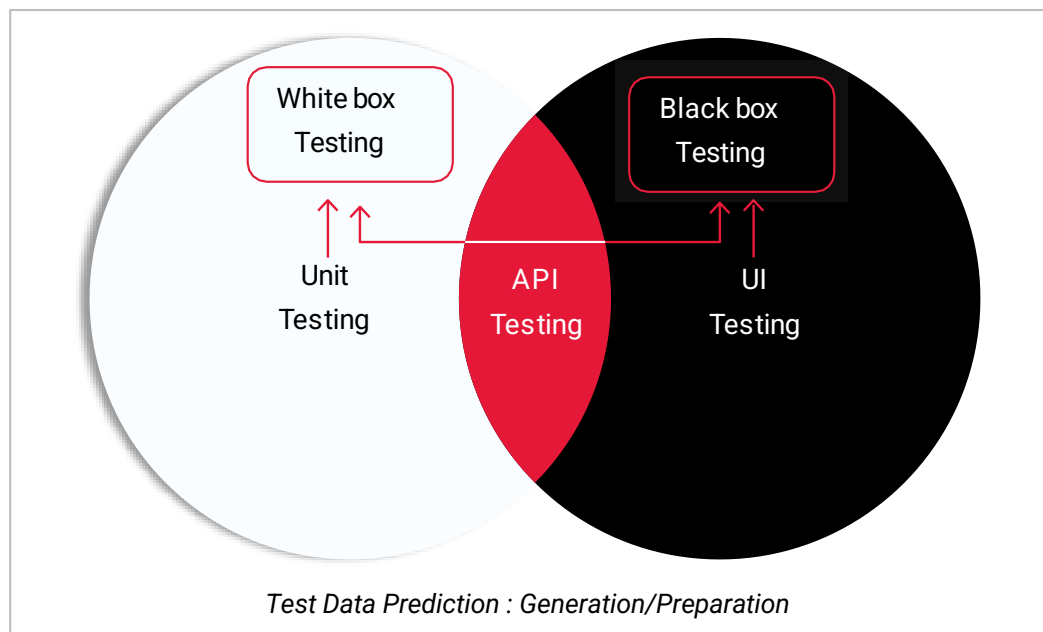


Fig2

- We can use machine learning to generate application programming interface (API) tests by recording traffic to analyze and create tests, prepare these tests in white box testing approach and leverage for black box test execution
- We can create unit tests using machine learning to reduce efforts in preparing tests by developers; identify and apply different algorithms to prepare a smaller number of unit tests and test all the modules
- We can use machine learning algorithms to find the broken links, identify controls in case of position change, execute tests on multiple browsers/devices, also prepare tests in plain English (using NLP) then execute the test cases
- We can prepare models to create data sets
- We can identify, create, and execute test cases based on our previous executions



Machine learning with natural language processing helps our customers to implement test automation from the development phase and is suitable for all types of methodologies, viz. Agile, Waterfall, including support/maintenance projects.

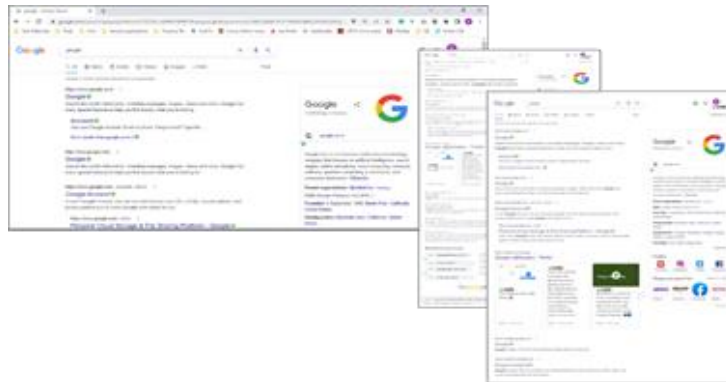


Fig2

Now, mobiles are an essential part of the human life to perform day to day activities, applications to access and perform all the operations. Wide variety of mobiles are launched into the market every day with latest features, dimensions, user experience, at the same time the same applications are accessible over laptops/desktops. Test automation scripts are intelligent and can easily identify the controls of mobile and laptop browser to execute seamlessly. It will also be possible using machine learning, as it can identify the controls/objects in any place of the UI and perform the required operations.

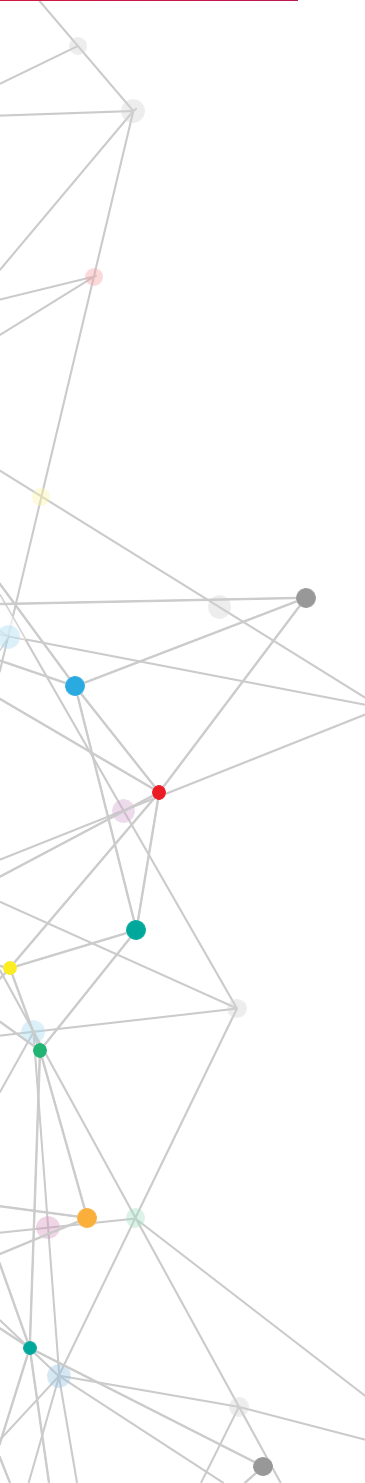


Most customers look for a solution with no-code/low-code in the design of test automation and wants to leverage their functional consultants/business analysts/manual testing team to design the automated test scripts. NLP helps in designing automated scripts by writing test steps in plain human readable English language, and this approach helps in all the software development methodologies i.e., Agile, Waterfall, to prepare scripts from the initial stages, which further helps in achieving a complete shift left in process.

Chatbots are very useful to capture the execution result(s), compare executions, initiate test execution – full or partial suits, select tests for execution. Chatbots help all users to share the execution status, publish execution results by sharing the repository location to access.

- 1** Open [www.google.com](http://www.google.com) using chrome browser
- 2** Type Test Automation in search box and press enter
- 3** Click on Images
- 4** Open image with Test Automation in future text
- 5** Take the screenshot and store
- 6** Close the browser

Fig4



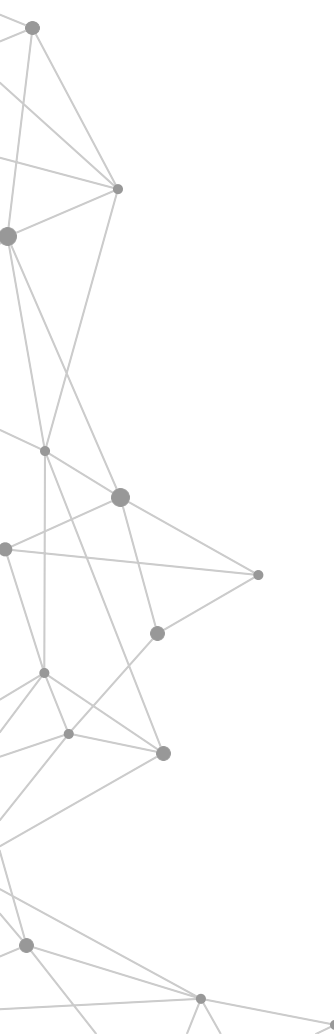


## Future opportunities in test automation using AI

- Test creation, execution, and sharing of results over chatbots
- Prediction of tests for execution based on the previous executions and changes in application
- Self-healing of tests in case of change in the object properties, environment change and test data preparation before execution
- Prepare test scripts by understanding the application navigations and generate multiple sets

## Conclusion

Most of the test automation tools today, are equipped with artificial intelligence embedded in them. We work with multiple test automation tools and vendors to ensure that we are leading the race in supporting our customers with effective and timely solutions.



## Author



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Kishore Kandula is a technology leader with 20 years of experience in testing, test automation and DevOps in software service Industry. He has worked with various customers including banking, oil and gas, manufacturing verticals also managed large teams with proven experience in test automation, RPA, DevOps and Agile initiatives, end to end value stream. He is frequent with participating in customer workshops, providing the right tools, right framework and required approach to generate early ROI. Kishore has established expertise in setting up end to end automation from design to execution using different tools which include licensed and open source as he is certified in test automation, RPA, machine learning, Blockchain and Metaverse areas.

