

## Can Artificial Intelligence (AI) Replace Humans in Quality Assurance (QA) Testing?

About two decades ago, software professionals could rely on the fact that software testing was done by testers or those belonging to the QA fraternity. But with the evolution of technology, this concept does not quite hold so true today!

Is the scenario the same?

Unfortunately not.

Artificial Intelligence has evolved over a while, making headway into many game-changing streams, one of them being software testing.

*Does it mean that Artificial Intelligence will take away all those years of hard work that QA professionals put in? Yes and no.*

It may not take away or replace humans; however, it will change the scenario drastically for good.

Can we interchange Machine Learning and Artificial Intelligence?

Although they are probably the hottest keywords today, you cannot interchange them. Machine Learning is a way that machines can smartly carry out tasks assigned to them.

Artificial Intelligence is like the mother of Machine Learning, where the latter is fed in data and given access to information that enables them to learn everything themselves.

*Just like in the movie Terminator! The evolution of an advanced Machine programmed to learn from its surroundings and grew in the hospitable (or inhospitable in this case) human surroundings.*

The concept dates back more than 20 years, and today they are pretty visible in many core aspects of our industry and academia because of commanding computer hardware. However, as the human mind has progressed, so has the application of AI, which has increased the complexity of calculations that it can handle.

Moving on, let us take a look at the meaning of QA testing and its application today?

Most people get slightly confused when we talk about Quality Assurance, Testing, and Quality Control. However, there are distinct characteristics of all three that enable us to decipher them better.

Quality Assurance

1. This particular aspect includes implementing procedures, processes, and standards to verify the developed software and its intended requirements.

2. It is more process and procedure-driven and focuses on the result rather than the actual testing of the system.
3. It is a preventive activity and a vital subset of the Software Testing Lifecycle (STLC).

### Testing

1. It is the identification of bugs/errors/defects in software.
2. It focuses on the actual testing of the software.
3. It is a subset of quality control and is involved in product-oriented activities.

### Quality Control

1. It involves verification and validation of software as per the documentation, in most cases.
2. It focuses on actual testing to identify the defect or bug by implementing various procedures defined in the spectrum of QC.
3. It is an actual corrective process that forms a subset of Quality Assurance.

With these fundamental differences in place, we can safely say that all three are related and not so connected simultaneously.

### Who are QA testers?

Testing methodologies revolve around the software's functioning per the design specifications prescribed. It also states that there will be no undesirable effect, even if the particular software fails, as in a nuclear reactor (it will shut down on failure).

Each organization has specific testing vertical known as Software testing / Software testers, responsible for testing the company's software. It could be a financial product or a manufacturing one, mobile app development, or industrial software; everything needs to go through a thorough test to determine its functioning and integrity.

Testing has been a popular career choice for many individuals across the globe because of its scope of growth. For example, QA testing involves integration testing, unit testing, compatibility testing, performance testing, security testing, acceptance testing, system testing, usability testing, etc.

With such a vast area to cover, *QA testing* has been a great career choice for many individuals globally.

### What has changed?

Today, with the evolution of AI, many people fear that AI will completely overshadow and replace humans in QA testing. Well, let us have a look!

AI has evolved drastically over time and has enabled many systems to perform better than before.

- They are taught to think like humans and carry out tasks by enabling them with the right tools. It has set the pace of reducing many mundane tasks that humans perform and help them concentrate on more efficient production.
- In every industry, including testing, there have been certain insecurity regarding the introduction of Artificial Intelligence. Employees fear AI will take their jobs from them; however, that is not the case. *(And today you see the same fear creeping in, in the Content Industry too. But we'll talk about this in another article.)*
- Humans are responsible for creating these machines and enabling artificial intelligence so that AI can take on tasks that probably human minds cannot.
- Unlike the industrial revolution in the 1800s, artificial intelligence is more about humans getting better access to tools that will make them better testers, creating better products.
- Today, in the advent of stiff competition and tight budgets, testing is an option that hits the organization every time.
- There are newer versions of software and mobile applications presented at a sky-rocketing pace. To enable organizations to perform better than their contemporaries, AI and humans can be paired with artificial intelligence or machine learning capabilities to drive the future of testing augmentation.
- Many organizations are taking the help of artificial intelligence to boost their turnaround time because of stringent timelines while keeping the human interface intact.
- AI can learn several aspects of testing by allowing it to access a wide range of data; however, humans ultimately feed in this data and help the bots evolve.
- AI can run algorithms, which may require a tremendous amount of time for humans to do. Testers can test how the product performs on different platforms; however, AI can run the algorithm better, making testing relatively simple.

The challenges that are faced by humans while doing QA testing are different as compared with AI.

AI - A Threat or Not?

Today, Artificial Intelligence is present in multiple facets of work and roles across the industry. Owing to this change, numerous products are getting launched with the accelerated help of AI.

However, software testing is no different from other software development streams that utilize AI bots' expertise to deliver quick and precise results.

- With software development cycles becoming complicated every day, the need of the hour calls for a reduced timespan put in testing those software cycles.
- Testers need to deliver quick feedback and upgrade their testing methodologies to match the turnaround time.
- Utilizing AI testing will benefit humans in delivering new product launches at breakneck speed and precision.
- It will help humans elevate these skills as software testers as their knowledge base will coherently increase.
- AI-enabled testing platforms can quickly identify control changes and work more efficiently than humans based on algorithms and programming.
- Ultimately, testing is about verifying and validating all the codes used to run a particular program efficiently. Artificial Intelligence testing helps access a plethora of user data and analyze it to report the slightest discrepancy.

Case in point- With multiple software versions launched and OS being upgraded week on week or month on month, it requires humans to cater to testing requirements strategically. By integrating machines that can precisely impersonate humans in testing, the team of QA testers can take a deviation from the traditional testing route and apply their knowledge in progressively moving forward toward better-automated systems.

### Benefits of AI in Testing

With continuous back and forth regarding the threat AI testing poses to humans and replacing QA testing done manually, let us give you a little insight into the salient features and benefits of AI testing.

#### Accurate

AI testing is best known for its precise and accurate outcome. Of course, to go wrong is quite natural for humans; however, Artificial Intelligence uses real-time data to understand the complexities of performing the steps without failure.

There is a high chance of getting the test results wrong if you are doing the same job repeatedly. It is not the case with AI testing. New automated software gives you the leverage to overcome these repetitive errors and improvise your skills to create better software.

#### Assists developers and testers alike

If there is any change in source code, there is a higher chance of catching that change with the help of automated or AI testing before going to QA. Tests can sprint, changes get notified beforehand, helping developers save time.

#### Limitless possibilities

AI software testing can run multiple user test cases simultaneously, saving time and energy expended by manual testers. Humans will find it almost impossible to complete and simulate

these test cases manually, giving them a high chance of error. AI can virtually interact with a series of network and web-based applications to simulate this information.

### Predictive analysis

AI can apply information from different metrics, carry out predictive analysis of the current test cases, and generate a new test execution. Thus, it will result in improved testing efficiency.

### Increased coverage

While manual testing carried out by humans can penetrate up to a certain level to improve the quality of the software, automated software testing can look deep into memory and file logs, internal programs, and data tables to determine the software's behavior.

### Increased revenue

With the increase in turn-around-time, there is a higher possibility of increasing output levels and, in turn, increasing revenue. However, repeating the same tests in the same scenarios can be costly to companies because of sheer waste of time and energy. With AI software testing, companies can reduce their testing timespan to hours instead of days.

### Conclusion

Humans have developed AI to automate systems and make work more productive. Similarly, AI testing is conceived by humans who created a knowledgeable virtual being that can copy human behavior and understand different aspects of industries.

Software testing is undergoing many changes with the evolution of AI testing, which will pave the way for manual testers to work on improvising test case scenarios and writing scripts that are imperative to the success of testing.

We help to get the work done with precision without worrying about failed scenarios and repetitive tasks.