TEST AUTOMATION WITH ARTIFICIAL INTELLIGENCE: INTELLIGENT TEST SCRIPTING RELATED TO SOFTWARE TEST AUTOMATION

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ABSTRACT

The concept of this research is based on the "automated test script generation" by using the AI as per the marketing criteria of the business organizations. This research report can be able to present several kinds of the relevant factors based on the selected content for the study. On the other side, this study can be able to present the aim as well as the other goals connected to the selected research content. Besides this, this study mentions the applied methods, as well as the sustainable factors based on the content of the study. The computed outcomes are quite reliable for the "automated test script generation" by applying the AI in the case of the modern business system.

Keywords: Artificial intelligence (AI), Intelligent Test scripting, Automated Testing, Machine Learning.

INTRODUCTION

This research content is capable of presenting the concept of "test automation with artificial intelligence (AI)" in a detailed and sustainable manner. However, this concept is getting more and more significance as per this modern era. The population base from this recent generation is getting interested to use this innovation in their daily lives. On the other hand, the study is capable of showing the significance and risk factors of this AI based test automation in this current era. According to the topic of this recent research study, it can be annotated here that this test automation is capable of presenting a reliable procedure of applying the effective automation tools. These automation tools are able to maintain the test data, execute the demanded tests, and analyze the test outcomes to develop the quality of the software. Besides this, it may be stated here that this automated testing can be called "automated QA testing or test automation". At the time this is executed well, it can be able to relieve a lot of the manual requirements connected to the testing lifecycle.

According to the current research, the configuration and the relevance of the "AI-driven test scripting and maintenance" can be noted in a sustainable manner. Based on the current facilities of this mechanism, it may be stated in this step of the research study that the applications of the AI automation can be able to develop the software testing mechanisms with the several kinds of the benefits as well as challenges of the "AI-powered test automation". In such a way, the configuration and the importance of the research study can be able to collect a huge amount of acceptance rate from the population base of this generation. The business industries can be able to know several information and facilities of this "AI-driven test scripting and maintenance". Through this innovation, the present generation can be able to modify thot working procedure based on their criteria. However,

this stated "automation of test script generation" can be able to reduce the time as well as the manual effort required to make the test scripts in a manual way. Apart from this, it needs to be presented here that the testers of this generation no longer need to provide more working hours for scripting each of the test cases, meticulously. The configuration of this "automated test script generation" can be able to accelerate the total mechanism of this test automation.

Research Aim

The main aim of this research study is to maintain and modify the mechanism of the "automated test script generation" as per the criteria and demands of the present generation by using AI.

Research Objectives

The effective objectives for this recent research content can be;
- To identify the effective risk factors of the mechanism of "automated test script generation" by applying the AI.
- To modify the configuration as well as the working procedure of this "automated test script generation" by using the AI for the people from this current generation.
- To mention the sustainable facilities as well as the disadvantages of this test automation procedures by using AI in the case of this recent era.
- To analyze the working strategy of "automated test script generation" according to the current time of the industry based on software engineering.

As per the view of the research, the current population base and the authorities of the business industries can be able to modify their marketing strategies based on the "automated test script generation". Several kinds of the facilities can be achieved by the marketing organizations in this current era. The manpower as well as the time of the organizations can be reduced and applied into other jobs of the organization. In such a way, the organizations can be able to develop their working strategies as well as the job schedules based on the criteria of their customer base of this recent era.

Apart from this, it can be shown here that this research study has applied the effective data related to the research content. On the other hand, the chosen methods as well as the selected infrastructure of this research study is quite sustainable for getting the accurate outcomes based on the selected objectives for this research report.

METHODS

Based on the configuration as well as the stated objectives of this research study, it can be annotated here that this study has applied a reliable concept and infrastructure for implementing the goals of the study. On the other hand, the chosen methods for developing the research outcomes are quite valid for the criteria of this current research study. The research is presenting effective and relevant information based on the concept of this recent research study. However, this study has applied the qualitative method for implication the research. The data collection procedure for this research content is quite sustainable based on this recent era. However, the research is based on the secondary data set connected to the content of the recent research study. This research presents the relevance of the AI in the current era for developing the "automated test script generation". Based on the concept of Artificial intelligence, it can be presented that this is a field that can be able to combine the computer science as well as the substantial datasets, so that it can be possible to facilitate several kinds of the problem-solving in a reliable manner [1]. According to the research content, it needs to be stated in this step of the study that "three primary sections of the AI technologies" are,

- ANI ("Artificial Narrow Intelligence")
- ASI ("Artificial Super Intelligence")
- AGI ("Artificial General Intelligence")

These divisions are getting more and more reliable in the case of the modern business industries as well as the daily lives of the human beings. For such a reason, the research has chosen this significant content for developing the working mechanism of this content in a significant and effective way. Besides this, it can be annotated here that this research study can be able to identify and solve the reliable risk factors of this research content, "automated test script creation" [2]. Based on the infrastructure and the chosen method of this research report, it can be stated that this "test scripts in the automation testing" is becoming a reliable factor for the QA professionals of this current era. As per the view of Amariles and Baquero (2023), it can be pointed out here that the mechanism of the "intelligent test authoring" is capable of creating the test cases of the test scripts for the procedure of the software testing by applying the "advanced technologies as well as automation techniques". This mechanism involves the application of "artificial intelligence (AI), natural language processing (NLP), and the machine learning (ML)". In the case of the review of Bakrania*et al.* (2023), it can be shown that these kinds of the applications are capable of automating the "test script creation procedure" in a reliable way. Here, it can be possible to present some of the significant scripting techniques applied in the case of the test automation [3]. These are,

- "Shared Scripting Technique"
- "Linear Scripting Technique"
- "Data-Driven Scripting Technique"
- "Structured Scripting Technique"
- "Keyword Driven Scripting Technique"

These techniques are capable of developing the all over content of "automated test script generation" as per this recent era. According to these presented techniques, it can be shown here that the "intelligent test automation (ITA)" is capable of maintaining a method for software testing that applies the reliable "Artificial Intelligence (AI) algorithms", so that it can be capable of creating the automation in a more stable way [4]. This procedure is able to assist the author to scripts as well as generate the analytics for more reliable decision making and debugging. Besides this, it can be pointed out here that the automation scripts are quite small, as well as the "targeted pieces of code". This code can be able to extend the selected product of the modern business organizations across the country [5]. The "automation script" consists of "a launch point, the source code, as well as the elements with the corresponding binding values". According to the presented view of Dratsch*et al.* (2023), it can be pointed out here that the users of this application are able to apply the wizards for creating the factors of the "automation script".

Based on the infrastructure and the activities of the "test script creation procedure", it can be shown here that the accurate goal of these "intelligent automation tools" is to reduce the total costs, streamline procedures, as well as develop the "efficiency of the business operations" [7]. The concept of the "intelligent automation" can be stated as the "first coined" by Forrester Research. This procedure can be able to describe the effective tools that are capable of supporting the enterprise automation in the case of the "business process management".

RESULTS

The concept of the "intelligent test automation" can be able to supercharge the testing mechanism by leveraging machine learning as well as the "artificial intelligence (AI)" [8]. It can be capable of accelerating the "execution, test case creation, and the analysis". This is able to reduce the testing cycles as well as the "time-to-market". However, the

automated test scripts are able to adapt the changes of code as per the criteria of the users [9]. On the other hand, it may be capable of allowing for the "quicker feedback loops" as well as the "continuous testing".
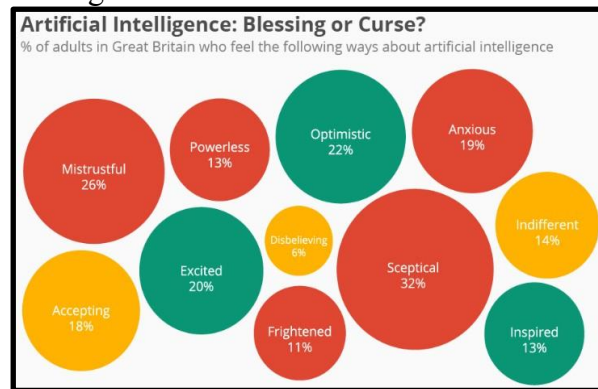

Fig. 3.1."Artificial Intelligence: Blessing or Curse?"

In the case of this above figure 3.1, the concept of "Artificial Intelligence: Blessing or Curse?" can be noted down in a sustainable manner. However, based on this figure, it can be presented that, some days ago, AlphaGo was developed by Google DeepMind [9].

This is a significant "artificial intelligence software". This software won the 5th as well as the "final game of Go" against the "human world champion Lee Sedol". The "4-1 victory" of the computer in a "weeklong series of the 5 games" can be able to mark a major and reliable "milestone for the artificial intelligence (AI)" [10]. These activities happened at the time when computers have been able to beat the "human world class chess players" for a lot of years. Now, the "game of Go" has been quite difficult for the machines, so that it can be mastered in past years, in a notorious way. However, the population base of this era can be quite excited based on the victory of modern science over human skill [11]. Other factors connected to this concept are quite fearful of what AI may be able to do in the future. According to a result of the recent survey that was commissioned by the "British Science Association", it has shown that the current view of the population base connected to the application of artificial intelligence (AI) is by no means positive in an unequivocal way.

Besides this, it can be annotated here that the attributes of this application can be quite skeptical, mistrustful, as well as anxious [12]. These factors were the most cited when almost "2,019 Britons" were questioned about the mechanism of the population base's feelings about the applications of AI. Almost 36% of the all over respondents believe that the activities through the intelligent machines can be able to pose a threat to the "long-term survival of humanity" [13]. This mechanism is capable of presenting a reliable view that can at least in step be influenced through the popular theme of Hollywood, "robots turning on the humans".
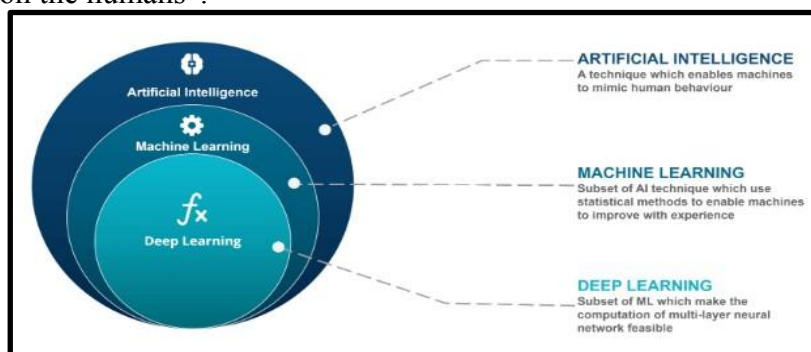

Fig. 3.2. "Artificial Intelligence (AI) & ML models"

As per the infrastructure of the above figure 3.2, the "Artificial Intelligence (AI) & ML models" can be noted down in a sustainable manner. However, through the presented view of this research report, it may be possible to mention here that Machine learning is a "subset of artificial intelligence (AI)" [14]. The ML based algorithms of this recent era are presenting the reliable "study of the computer algorithms" based on the current criteria of the business industries. Besides this, it may be possible to note down that this activity is learned through some of the effective and sustainable data connected to the accurate content [15]. According to the concept of machine learning, it needs to be presented in this step of the research report that the test automation can be able to refer to applying the "machine learning algorithms and techniques", so that it can be capable of developing several kinds of the aspects of the test automation [16]. As an example, the "test case execution, test case generation, as well as the test data management" can be pointed out in this part of the current research study.
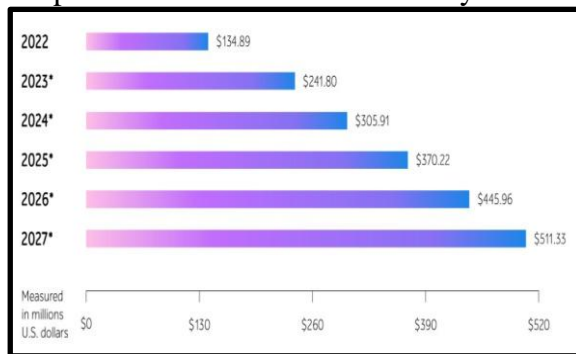

Fig. 3.3. "Artificial intelligence (AI) market revenue, worldwide 2022 to 2027"

Based on the presented graphical representation 3.3, the "artificial intelligence market revenue, worldwide 2022 to 2027" can be noted in a reliable way. This graphical system is quite sustainable for getting the all over information connected to the application of AI as well as the ML based algorithms according to this recent era [17]. The concept of implementing the AI and the ML-based applications can be able to provide the "better optimization of the problem-solving procedures as per the criteria of the users. On the other hand, these applications are capable of presenting the effective "fast decision-making strategies" to the authorities of the modern business organizations across the country [18]. Based on the Forbes Advisor, around 64% of the total marketing anticipate AI can be able to increase the rate of productivity and almost 60% of the total number of businesses anticipate that this activity may drive the rate of the sales growth based on the modern competitive market of the country. As per the concept of the modern era of automation, the activities by ML as well as AI are noted as an "inevitable and reliable part of software development" [19]. However, these activities are capable of strengthening the competitive advantage based on the concept of the modern business strategy. On the other hand, it can be possible to point out here that the activities of AI can be able to assist in achieving more and more relevant and accurate outcomes [20]. Besides this, it may be presented in this step of the research study that the presentation happens with the "QA function", such as the test automation. IV. DISCUSSION

The research has maintained the all over concepts as well as the reliable information base on the selected content, "automated test script creation" by applying the AI [5]. The research has used the secondary datasets connected to the presented topic. On the other side, this research has chosen the qualitative research method for implementing the accurate results connected to the "automated test script generation" by using the application of AI [8]. This research has applied the effective data sources for developing

the quality of the research result as per the selected objectives of the research report. The study is capable of maintaining the risk factors as well as the effective advantages of this "automated test script creation" through the application of AI. The research report has focused on the sustainable ethics connected to the qualitative research study. For such a reason, the result of this report can collect a huge amount of acceptance from the side of the current population base across the country.

As per the configuration as well as the activities of the automation testing, it can be pointed out that this system aims to develop the testing accuracy, efficiency, as well as the all over speed by "timeconsuming manual testing tasks" as well as the "automating repetitive tasks" [12]. Based on the configuration and the all over information of this study report, it can be possible to show here that the test automation or the automation testing applies the "paid or open-source automated testing tools" as per its criteria. These "paid or open-source automated testing tools" are able to test the reliable software applications in a quick way [15]. The all over application is able to maintain the total concept in a more efficient manner. These applications are capable of presenting almost "24/7 without human intervention" based on the criteria of the users of this current era. Besides this, it can be quite sustainable to present in this research report that the "Cloud-based RPA tools" can be able to run the scripts, based on the relevant and powerful backend servers. This system is not based on the local browsers or systems according to the current era [2]. For such a reason, it can be presented in this report that the application of AI is capable of creating the techniques fast without the invoking of the system as per the script.

In such a way, this research report can be able to modify the selected content based on this current era. The business organizations can be able to increase their rate of productivity through the applications [16]. On the other hand, by using the application, the authorities of the business companies are capable of maintaining their working time as well as the job schedule based on the demands of their marketing strategies based on this recent time.

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