Review Form 1.7

Journal Name:	**Asian Journal of Research in Computer Science**
Manuscript Number:	**Ms_AJRCOS_106888**
Title of the Manuscript:	**Integration of Artificial Intelligence and Robotics**
Type of the Article	

Review Form 1.7

PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?** **4. Are subsections and structure of the manuscript appropriate?** **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	**Yes** **Different titles suggested are as follows..** **"Synergy Between AI and Robotics: A Comprehensive Integration"** **"Merging AI and Robotics: Advancements and Applications"** **"The Convergence of Artificial Intelligence and Robotics"** **The provided abstract gives a general overview of the article's topic, but it lacks specific details and may benefit from some improvements to enhance comprehensiveness. Here I am writing few lines that can be incorporated in abstract to make it more comprehensive:** **Abstract (Revised):** **The integration of artificial intelligence (AI) and robotics is a pivotal endeavor aimed at bridging the gap between algorithmic intelligence and physical-world applications. This review delves into the emerging field of machine intelligence (MI), where AI and robotics converge to create intelligent systems capable of interacting with our human-centric environment. These systems exhibit self-awareness and adaptability to their surroundings, promising transformative impacts on various industries.** **This article provides a comprehensive historical perspective on the development of machine intelligence, tracing its roots back to the twelfth century while emphasizing its contemporary relevance. It explores the current state of AI and robotics, highlighting significant systems and recent research directions. Key findings and insights are presented, shedding light on the evolving landscape of intelligent automation.** **Furthermore, this review addresses the remaining challenges in the field, offering practical insights into overcoming barriers to achieving fully autonomous intelligent systems. It concludes by underscoring the profound implications of AI-robotics integration for human-machine interactions and outlines potential avenues for future research and innovation.** **Yes** **Yes** **Yes** **Few below grammar mistakes needs to be resolved..** **1. Nevertheless, the significant disparity between the algorithmic realm and the physical realm hinders current systems from achieving the desired outcome of creating intelligent and user-friendly robots that can effectively engage with and manipulate our human-centric environment.** **Delete the noun "realm" to avoid repetition.** **2. Nevertheless, the significant disparity between the algorithmic realm and the physical**	

	realm hinders current systems from achieving the desired outcome of creating intelligent and user-friendly robots that can effectively engage with and manipulate our human-centric environment. **Delete the article "the" to avoid repetition.** **3. Nevertheless, the significant disparity between the algorithmic realm and the physical realm hinders current systems from achieving the desired outcome of creating intelligent and user-friendly robots that can effectively engage with and manipulate our human-centric environment.** **The plural form of "realm" should be used here.** **Replacement suggestion: realms** **4. The nascent field of machine intelligence (MI), which combines robotics and artificial intelligence, strives to develop reliable and embodiment-aware artificial intelligence systems.** **The verb "strives" appears to be in the incorrect tense; revise it to "is striving."** **5. These systems possess self-awareness and an understanding of their environment, enabling them to adapt to the interacting body they are operating.** **Rephrase this portion for readability.** **Replacement suggestion: their interacting bodies** **6. The incorporation of artificial intelligence (AI) and robotics into control, perception, and machine-learning systems is necessary for the realization of fully autonomous intelligent systems in our everyday existence.** **The word "our" seems unnecessary.** **7. This review provides an overview of the historical development of machine intelligence, tracing its origins to the twelfth century.** **The verb usage seems incorrect; use "traces" instead.** **8. It then proceeds to examine the present state of robotics and artificial intelligence (AI), discussing significant systems and contemporary research directions.** **The verb usage seems incorrect; use "examines" instead.** **Replacement suggestion: examines** **9. Additionally, the article outlines the remaining challenges in these fields and speculates on the potential future of human-machine interactions that has yet to be realized.** **Use "are" instead of "has."** **10. The convergence of robots and artificial intelligence (AI) is rapidly emerging as a catalyst for the development of novel industries, state-of-the-art technology, and enhanced productivity and efficiency across established sectors [1].** **The plural form of "technology" should be used here.** **11. The ongoing development of artificial intelligence (AI) in the field of robotics is leading to a growing recognition of its practical applicability in various real-world contexts [2].** **The verb "is" appears to be in the incorrect tense; revise it to "has."**	

	12. The ongoing development of artificial intelligence (AI) in the field of robotics is leading to a growing recognition of its practical applicability in various real-world contexts [2]. **The verb usage seems incorrect; use “led” instead.** **13. The ongoing development of artificial intelligence (AI) in the field of robotics is leading to a growing recognition of its practical applicability in various real-world contexts [2].** **Delete the indefinite article before “growing.”** **14. Artificial intelligence (AI) is significantly contributing to the transformation of various industries and enhancing the quality of everyday life.** **Rephrase this portion for readability.** **Replacement suggestion: contributes significantly** **15. Artificial intelligence (AI) is significantly contributing to the transformation of various industries and enhancing the quality of everyday life.** **The verb usage seems incorrect; use “enhances” instead.** **16. It applications ranges from self-driving automobiles, customer service and healthcare to industrial and service robots [3].** **Use “These” instead of “It” in this context.** **17. It applications ranges from self-driving automobiles, customer service and healthcare to industrial and service robots [3].** **The verb (“ranges”) does not seem to agree with the subject in number.** **18. It applications ranges from self-driving automobiles, customer service and healthcare to industrial and service robots [3].** **The plural form of “service” should be used here.** **19. Despite apprehensions around the potential displacement of human labor by AI and robotics, the World Economic Forum (WEF) forecasts a net increase of 12 million _employment resulting from the use of this technology by the year 2025 [4].** **A preposition may be needed after “million.”** **20. The current expansion offers a favorable circumstance for the retraining and acquisition of new skills among the workforce, as well as the allocation of resources towards knowledge development that is in line with the most recent technological advancements [5].** **Replace “that” with “which” here.** **21. The integration of artificial intelligence (AI) and robotics holds significant promise for transforming work responsibilities in many sectors.** **Use “in” instead of “for” in this context.** **22. The potential applications of artificial intelligence (AI) in the realm of robotics are**	

	many and diverse, rendering it a captivating area of study and comprehension. **Consider deleting “the realm of” in this context.** **23. The potential applications of artificial intelligence (AI) in the realm of robotics are many and diverse, rendering it a captivating area of study and comprehension.** **Consider deleting “many and” in this context.** **24. Robotics is a multidisciplinary field that encompasses the design, construction, operation, and use of robots.** **Rephrase this portion for readability.** **Replacement suggestion: encompassing** **25. Robotics is a discipline within the fields of engineering and computer science, encompassing the conceptualization, fabrication, and utilization of robots endowed with the ability to execute predetermined actions autonomously, hence obviating the need for human intervention [8].** **The verb usage seems incorrect; use “encompasses” instead.** **26. Robotics is a discipline within the fields of engineering and computer science, encompassing the conceptualization, fabrication, and utilization of robots endowed with the ability to execute predetermined actions autonomously, hence obviating the need for human intervention [8].** **The word “thus” may be more suitable here.** **27. Fundamentally, the field of robotics revolves around the utilization of technological advancements to streamline and enhance the efficiency and safety of various jobs through automation.** **Consider deleting “the field of” in this context.** **28. Throughout history, robots have been employed to carry out tasks that are deemed arduous or hazardous for human beings, such as the lifting of heavy machinery.** **Use “perform” instead of “carry out.”** **29. Additionally, they have been utilized for activities characterized by high levels of repetition, such as the assembly of automobiles.** **Rephrase this portion for readability.** **Replacement suggestion: automobile assembly** **30. Through the automation of these jobs, robotics solutions have the potential to augment productivity and boost safety, so allowing human workers to allocate their efforts towards more intricate and innovative pursuits.** **The word “robotic” may be more suitable here.** **31. Through the automation of these jobs, robotics solutions have the potential to augment productivity and boost safety, so allowing human workers to allocate their efforts towards more intricate and innovative pursuits.** **Consider deleting “so” in this context.**	

	32. It is noteworthy to mention that robots are not bound by the same constraints as human beings. **Consider deleting “to mention” in this context.** **33. It is noteworthy to mention that robots are not bound by the same constraints as human beings.** **Rephrase this portion for readability.** **Replacement suggestion: humans** **34. As an illustration, it is observed that a human engaged in repetitive tasks may experience fatigue, ennui, or disinterest, whereas a robot will persist in executing the same activity with a consistent degree of effectiveness and accuracy.** **The verb “is” appears to be in the incorrect tense; revise it to “was.”** **35. As an illustration, it is observed that a human engaged in repetitive tasks may experience fatigue, ennui, or disinterest, whereas a robot will persist in executing the same activity with a consistent degree of effectiveness and accuracy.** **Replace “human” with “person” if appropriate in this context.** **36. As an illustration, it is observed that a human engaged in repetitive tasks may experience fatigue, ennui, or disinterest, whereas a robot will persist in executing the same activity with a consistent degree of effectiveness and accuracy.** **Use “continue” instead of “persist.”** **37. As an illustration, it is observed that a human engaged in repetitive tasks may experience fatigue, ennui, or disinterest, whereas a robot will persist in executing the same activity with a consistent degree of effectiveness and accuracy.** **Rephrase “in executing” as “to execute” for readability.** **38. Robotics solutions have already demonstrated significant influence in various industries, encompassing tasks such as precise crop harvesting, efficient delivery services, and streamlined automobile assembly processes [9].** **The word “Robotic” may be more suitable here.** **39. Robotics solutions have already demonstrated significant influence in various industries, encompassing tasks such as precise crop harvesting, efficient delivery services, and streamlined automobile assembly processes [9].** **Consider deleting “already.”** **40. Robotics solutions have already demonstrated significant influence in various industries, encompassing tasks such as precise crop harvesting, efficient delivery services, and streamlined automobile assembly processes [9].** **Use “including” instead of “encompassing.”** **41. Machine learning has emerged as a potent instrument for enabling robots to perform complex tasks.** **Replace “instrument” with “tool” if appropriate in this context.** **42. Robots can enhance their understanding of the world, devise strategies to navigate barriers, and optimize problem-solving techniques to enhance task**	

	completion efficiency through the process of exploring their surroundings. Rephrase this portion for improved readability. **Replacement suggestion: by** **43. Machine learning is playing a crucial role in enhancing the intelligence and adaptability of robots across various domains, ranging from household robots such as vacuum cleaners to industrial robots employed in manufacturing facilities.** **Use “plays” instead of “is playing.”** **44. These aforementioned examples represent a mere fraction of the myriad uses of artificial intelligence within the realm of robotics in contemporary times.** **Consider deleting “aforementioned.”** **45. A robotics engineer is a someone who specializes in the field of robotics, which involves the design, development, and operation of robotic systems.** **Delete the indefinite article before “robotics.”** **46. A robotics engineer is a someone who specializes in the field of robotics, which involves the design, development, and operation of robotic systems.** **The subject (“engineer”) does not seem to agree with the verb in number.** **Replacement suggestion: engineers** **47. A robotics engineer is a someone who specializes in the field of robotics, which involves the design, development, and operation of robotic systems.** **Rephrase this portion for readability.** **48. The field of robotics has had a significant impact on a wide range of industries, and within this context, the work of a robotics engineer is of utmost importance.** **Delete the indefinite article before “robotics.”** **49. The field of robotics has had a significant impact on a wide range of industries, and within this context, the work of a robotics engineer is of utmost importance.** **The plural form of “engineer” should be used here.** **50. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **Delete the indefinite article before “robotics.”** **51. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **The phrase “engineers are” may be more suitable.** **52. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries,**	

	including manufacturing, security, aerospace, and healthcare [13, 14]. **53. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **The plural form of “professional” should be used here.** **54. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **Consider deleting “that is” in this context.** **55. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **Use “maintenance” instead of “upkeep” in this context.** **56. A robotics engineer is a highly skilled professional that is tasked with the construction, installation, and upkeep of machinery utilized in several industries, including manufacturing, security, aerospace, and healthcare [13, 14].** **Use “used” instead of “utilized.”** **57. While AI and robotics are occasionally utilized synonymously, they are, in fact, separate yet interconnected disciplines.** **Consider deleting “, in fact ,” in this context.** **58. Artificial intelligence (AI) and robotics possess the ability to exert substantial influence on diverse businesses and facets of human existence.** **Use “have” instead of “possess.”** **59. However, it is crucial to recognize that these two fields serve distinct purposes and function through distinct mechanisms.** **The plural form of “function” should be used here.** **60. In essence, AI neural network models exhibit resemblances to biological brain networks, whereas robotics can be likened to the anatomical structure of the human body.** **Consider deleting “In essence ,” in this context.** **Report this as incorrect** **61. In essence, AI neural network models exhibit resemblances to biological brain networks, whereas robotics can be likened to the anatomical structure of the human body.** **The word “resemble” may be a more concise alternative to “exhibit resemblances to.”** **62. Artificial Intelligence (AI) encompasses the advancement of systems capable of**	

	executing tasks that conventionally necessitate human intelligence, including but not limited to learning, problem-solving, and decision-making. **Rephrase this portion for improved readability.** **Replacement suggestion: require** **63. These systems have the capability to operate autonomously, without requiring continuous instructions, as they are designed to acquire knowledge and adjust their behavior independently [15-17].** **Rephrase this portion for improved readability.** **Replacement suggestion: can** **64. These systems have the capability to operate autonomously, without requiring continuous instructions, as they are designed to acquire knowledge and adjust their behavior independently [15-17].** **Use “because” instead of “as” in this context.** **65. In contrast, robotics pertains to the advancement of robots _capable of executing designated physical activities.** **Rewrite this by inserting “that are” after “robots.”** **66. These robots have the capability to be programmed in order to execute uncomplicated and repetitive tasks, such as the categorization of objects or the assembly of extremely small components.** **Rephrase this portion for improved readability.** **Replacement suggestion: can** **67. These robots have the capability to be programmed in order to execute uncomplicated and repetitive tasks, such as the categorization of objects or the assembly of extremely small components.** **Consider deleting “in order” in this context.** **68. These robots have the capability to be programmed in order to execute uncomplicated and repetitive tasks, such as the categorization of objects or the assembly of extremely small components.** **Delete the definite article before “categorization.”** **69. These robots have the capability to be programmed in order to execute uncomplicated and repetitive tasks, such as the categorization of objects or the assembly of extremely small components.** **Delete the definite article before “assembly.”** **70. Certain applications in the field of robotics necessitate robots to perform predetermined behaviors without the inclusion of supplementary cognitive functionalities.** **Use “require” instead of “necessitate.”** **71. Certain applications in the field of robotics necessitate robots to perform predetermined behaviors without the inclusion of supplementary cognitive functionalities.**	

	Delete the definite article before “inclusion.” **72. Certain applications in the field of robotics necessitate robots to perform predetermined behaviors without the inclusion of supplementary cognitive functionalities.** **The word “including” may be a more concise alternative to “inclusion of.”** **73. Significant advancements have been achieved in the field of artificial intelligence (AI) in recent years, leading to its seamless integration with robotics, which may be seen as a logical and organic evolution.** **Use “viewed” instead of “seen.”** **74. Although the prevalence of AI in robotics is not yet extensive, its adoption is swiftly accelerating due to the increasing sophistication of AI systems.** **The word “rapidly” may be more suitable here.** **75. Although the prevalence of AI in robotics is not yet extensive, its adoption is swiftly accelerating due to the increasing sophistication of AI systems.** **Use “because” instead of “due” in this context.** **76. Although the prevalence of AI in robotics is not yet extensive, its adoption is swiftly accelerating due to the increasing sophistication of AI systems.** **Use “of” instead of “to” in this context.** **77. Machine learning is a prominent method by which artificial intelligence (AI) is employed in the field of robotics.** **Use “in” instead of “by” in this context.** **78. This methodology facilitates the acquisition and execution of particular tasks by robots through the process of monitoring and imitating human activities.** **Rephrase this portion for improved readability.** **79. Artificial intelligence (AI) provides robots with the capability of computer vision, which allows them to effectively traverse their surroundings, recognize objects, and make appropriate responses based on their observations.** **Rephrase this portion for readability.** **Replacement suggestion: respond appropriately** **80. Edge computing is an additional method by which artificial intelligence (AI) is employed in the field of robotics.** **Rephrase this portion for improved readability.** **Replacement suggestion: that employs** **81. The utilization of artificial intelligence (AI) in the field of robotics necessitates the processing of substantial volumes of data acquired by sensors integrated within robots.** **Use “requires” instead of “necessitates.”**	

	82. This data is promptly examined in close proximity to the robot itself, as opposed to being transmitted to remote cloud servers for computational purposes. **The word “These” may be more suitable than “This” here.**	

Review Form 1.7

Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	The author should review the content for coherence and ensure that the flow of ideas is smooth throughout the text. Here are some mistakes and suggested changes for the article: Abstract: Mistake: "The emergence of artificial intelligence is mostly linked to software-driven robotic systems, including mobile robots, unmanned aerial aircraft, and, to a growing extent, semi-autonomous automobiles." Correction: The sentence is somewhat awkwardly phrased. Consider rephrasing it for clarity, e.g., "Artificial intelligence has become closely associated with software-driven robotic systems, including mobile robots, unmanned aerial vehicles, and, increasingly, semi-autonomous automobiles." Mistake: "Nevertheless, the significant disparity between the algorithmic realm and the physical realm hinders current systems from achieving the desired outcome of creating intelligent and user-friendly robots that can effectively engage with and manipulate our human-centric environment." Correction: The sentence is a bit convoluted. Suggest simplifying it, e.g., "However, there is a substantial gap between the world of algorithms and the physical world, which impedes the development of intelligent and user-friendly robots capable of interacting effectively in our human-centric environments." Mistake: "The incorporation of artificial intelligence (AI) and robotics into control, perception, and machine-learning systems is necessary for the realization of fully autonomous intelligent systems in our everyday existence." Correction: The sentence could be more concise and direct, e.g., "Integrating AI and robotics into control, perception, and machine-learning systems is essential for achieving fully autonomous intelligent systems in our daily lives." Introduction: Mistake: "The convergence of robots and artificial intelligence (AI) is rapidly emerging as a catalyst for the development of novel industries, state-of-the-art technology, and enhanced productivity and efficiency across established sectors." Correction: The sentence is somewhat repetitive. Suggest rephrasing for conciseness, e.g., "The convergence of robots and AI is catalyzing the development of new industries, advanced technology, and improved productivity across various sectors." Mistake: "It applications ranges from self-driving automobiles, customer service and healthcare to industrial and service robots." Correction: "It applications" should be "Its applications." Additionally, consider rephrasing for clarity, e.g., "Its applications span self-driving automobiles, customer service, healthcare, and both industrial and service robots." Mistake: "Despite apprehensions around the potential displacement of human labor by AI and robotics, the World Economic Forum (WEF) forecasts a net increase of 12 million employment resulting from the use of this technology by the year 2025." Correction: The sentence is a bit unclear. Suggest rephrasing for clarity, e.g., "Although concerns about the displacement of human labor by AI and robotics exist, the World Economic Forum (WEF) predicts a net increase of 12 million jobs resulting from the adoption of this technology by 2025." Robotics:	

	Mistake: "Fundamentally, the field of robotics revolves around the utilization of technological advancements to streamline and enhance the efficiency and safety of various jobs through automation." Correction: The sentence is somewhat repetitive and can be made more concise, e.g., "Fundamentally, robotics uses technological advancements to automate and improve the efficiency and safety of various tasks." Mistake: "It is noteworthy to mention that robots are not bound by the same constraints as human beings." Correction: "It is worth noting that robots are not subject to the same constraints as humans." Machine Learning: Mistake: "Robots can enhance their understanding of the world, devise strategies to navigate barriers, and optimize problem-solving techniques to enhance task completion efficiency through the process of exploring their surroundings." Correction: The sentence is somewhat complex. Suggest rephrasing for clarity, e.g., "Robots can improve their understanding of the world, develop strategies for overcoming obstacles, and optimize problem-solving techniques by exploring their surroundings." Mistake: "Edge computing is an additional method by which artificial intelligence (AI) is employed in the field of robotics." Correction: The sentence could be more explicit, e.g., "Edge computing is another approach used to apply artificial intelligence (AI) in robotics." Is there a distinction between AI and Robotics? Mistake: "Artificial Intelligence (AI) encompasses the advancement of systems capable of executing tasks that conventionally necessitate human intelligence, including but not limited to learning, problem-solving, and decision-making." Correction: The sentence is a bit repetitive. Consider simplifying it, e.g., "Artificial Intelligence (AI) involves the development of systems capable of tasks typically requiring human intelligence, such as learning, problem-solving, and decision-making." Mistake: "Although AI and robots are distinct concepts, they possess a synergistic relationship that enables them to collaborate effectively, resulting in a diverse array of advantages and progress across numerous domains." Correction: The sentence is somewhat wordy. Suggest rephrasing for conciseness, e.g., "While AI and robots are distinct, their collaboration yields various advantages and advancements across domains." Flying Robots: Incomplete sentences: The first sentence is incomplete and doesn't make sense. It should be rewritten for clarity. Lack of proper structure: The article lacks a clear structure with headings or subheadings to separate different sections. Redundancy: The article repeats the term "autonomy" and its definition unnecessarily. Lack of proper citation: The article mentions various technologies, algorithms, and systems without providing proper citations or sources. Grammar and punctuation errors: There are several grammatical and punctuation errors throughout the article, making it difficult to read and understand.	

	Mobile Ground Robots: Incomplete sentences: Similar to the previous section, this section starts with an incomplete sentence, making it unclear. Lack of structure: Again, there is a lack of clear headings or subheadings to organize the content. Lack of proper citation: The section mentions specific robots and technologies without providing proper citations or sources. Grammar and punctuation errors: There are grammatical and punctuation errors in this section as well. Tactile Robotics: Incomplete sentences: This section also begins with an incomplete sentence. Lack of structure: There is no clear structure or organization in this section. Lack of proper citation: The section mentions specific robot systems and technologies without citing sources. Grammar and punctuation errors: As with the previous sections, there are grammatical and punctuation errors. Overall Mistakes: Lack of coherence: The article lacks coherence and fails to provide a clear and organized discussion of the topics. Absence of a conclusion: The article ends abruptly without a proper conclusion or summary. Lack of references: There are no references or citations to back up the claims and information presented in the article.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Kamalesh Kumar K. S.**
Department, University & Country	**Indian Veterinary Research Institute, India**