## Reviewer 1 Report

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| Response to Reviewer 1 Comments | | |
| **1. Summary** |  |  |
| Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted/in track changes in the re-submitted files*.* | | |
| **2. Questions for General Evaluation** | **Reviewer’s Evaluation** | **Response and Revisions** |
| Is the work a significant contribution to the field? |  |  |
| Is the work well organized and comprehensively described? |  |  |
| Is the work scientifically sound and not misleading? |  |  |
| Are there appropriate and adequate references to related and previous work? |  |  |
| Is the English used correct and readable? |  |  |
|  |  |  |
| **3. Point-by-point response to Comments and Suggestions for**  **Comments 1:** The authors should provide more details on the search strategy, including the specific keywords used and any additional inclusion/exclusion criteria applied during the screening process. | | |
| **Response 1**: Thank you for pointing this out. We agree with this comment. We have provided additional details regarding the search strategy being used. From line 118 to 124 we added the following:  These search terms and phrases focused topics regarding smart sensing chairs and sitting posture classification as shown in Table 2. Additionally, the phrases were combined with the “OR” condition in order to optimize the database search. Here is the refined search term used to query the associated research databases: Smart Sensing Chair OR Sitting Posture Recognition OR Posture Classification OR Sitting Posture Classification using Machine Learning OR Sitting Posture Monitoring OR Sitting Posture Detection.  Additionally, in Section 2.3 from line 130-137, we provided the list of exclusion criteria which facilitated the selection of the relevant research studies for inclusion in the review. | | |
| **Comments 2:** You need to include a table summarizing the key findings of each study, such as the sensors used, number of postures classified, classification accuracy, and user feedback mechanisms (if any). | | |
| **Response 2:** As advised, Table 3 – (Summary of the short-listed papers), was added to the manuscript. The summary table highlighted the key findings in each paper, such as the sensor type, number of postures, classification method, classification accuracy, and user feedback. | | |
| **Comments 3:** The discussion section can be expanded to explore the potential implications of integrating multiple sensor types for enhanced posture classification and the challenges associated with such an approach. | | |
| **Response 3:**  Thank you very much for pointing this out. Furthermore, we have expanded on Section 6.1.1 (Multiple Sensor Types) (page 16 and 17) by exploring the potential implication of using multiple types of sensors in the classification of sitting postures.  Furthermore, integrating multiple sensor types for enhanced sitting posture classification has its benefits of improving classification accuracy by enhancing the sensor coverage, subsequently strengthening the system’s robustness [35]. There are also potential benefits of using multiple sensor integration that goes beyond the basic detection of sitting postures such as continuous health monitoring and rehabilitative support. For instance, a recent study by Pereira et al. [23], looked at invisible electrocardiography (ECG) monitoring by using conductive Nappa strategically placed at the armrests.  However, there are a few defined challenges involved using this approach. Data fusion complexity is a main area that could pose as an obstacle when combining multiple types of sensors. Integrating data from different sensor types would most often require the use of data fusion techniques especially among IOT-based devices [82]. There are also the cost implications involved with using multiple types of sensors and with that comes the potential overhead regarding the needed system maintenance over time. In terms of data privacy and security, the collection and storage of sensitive user data potentially raises concerns regarding the safeguards being implemented to ensure that it has robust security measures in place, and it conforms to data privacy regulations [83]. | | |
| **Comments 4:** You need to discuss the feasibility and cost-effectiveness of implementing smart sensing chair systems in real-world settings, such as offices or healthcare facilities. | | |
| **Response 4:** We totally agree with this suggestion, in response to this we added Section 6.14 (Feasibility of Smart Sensing chair in the real-world setting) which discussed both the benefits and the challenges associated with the use of a smart sensing chair in a real-world setting. | | |

6.4 Feasibility of Smart Sensing chair in the real-world setting

The implementation of smart sensing chairs in real-life scenarios such as offices or healthcare facilities both has its opportunities and challenges. The current advancement of sensor technology has increasingly made it possible to actively monitor various sitting postures while also proving valuable user-feedback in real-time. Smart sensing chair systems have the capacity of promoting better sitting and posture habits by reducing the risk of musculoskeletal disorders among individuals who are regularly seated for an extended period, further improving the quality of life by actively promoting the habit of a wellness attitude while in the workplace of the healthcare environment.

While there are some benefits associated with the use of smart sensing chairs, there are a few challenges associated with it. Firstly, there are considerations regarding the reliability and accuracy of the sensor data as well as the possibility of false positives in the detection of sitting postures. Sensor drifts are always potential risk which most times is unavoidable and subsequently leads to inaccuracies of sensor readings over time [84]. Furthermore, regular sensor calibrations in these aspects are very crucial to ensure the accuracy and effectiveness of the sensor in the interpretation of the user’s postures.

There are also considerations concerning the integration with existing technological infrastructures, such as workplace networks and IT healthcare systems without extensive modifications and user adoption. The increasing adoption of IoT-based technology has made it a feasible option within both healthcare and workplace environments [85–87]. Furthermore, it is essential to ensure that smart sensing chair system conforms to both communication and security requirements of the given organization.

Additionally, there are also challenges in regard to the maintenance overhead and compatibility with existing furniture and wheelchair systems. Additionally, data privacy and the collection of sensitive user information is yet another area that must be considered in the implementation of these systems. In terms of cost-effectiveness, the hardware component being used, particularly the sensor and the computing unit, would largely depend on the overall affordability of each system.

## Reviewer 2 Report

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| Response to Reviewer 2 Comments | | | |
| **1. Summary** |  |  | |
| Thank you very much for taking the time to review this manuscript. Please find the detailed responses below and the corresponding revisions/corrections highlighted/in track changes in the re-submitted files*.* | | | |
| **2. Questions for General Evaluation** | **Reviewer’s Evaluation** | **Response and Revisions** | |
| Is the work a significant contribution to the field? |  |  | |
| Is the work well organized and comprehensively described? |  |  | |
| Is the work scientifically sound and not misleading? |  |  | |
| Are there appropriate and adequate references to related and previous work? |  |  | |
| Is the English used correct and readable? |  |  | |
| **3. Point-by-point response to Comments and Suggestions for** | | | |
| **Comments 1:** Although several papers are found in Sensors (Besel), the biggest concern is that it has not been reviewed in relevant databases such as PUBMED and Web of Science, Scopus. | | | |
| **Response 1**: We really appreciate you pointing out this concern. With the short among of time given to correct this paper, we decided to further increase our search radius by including the Scopus and the PubMed research databases. After thoroughly going through the Scopus database and removing duplicated papers, we found an additional 5 research papers that were relevant to our review; making it a total of 39 research studies. | | | |
| **Comments 2:** The sensor parts are relatively well written, but the detection technologies are not well reviewed. A chapter should be devoted to explaining posture detection and detection techniques. The author presented detection models in 4.3. and the authors should present traditional statistical models as well as rule-based and intelligent techniques besides CNN. | | | |
| **Response 2:** Thank you very much for pointing this out. As advised, a new chapter titled “**Posture Detection and its techniques**” was created on page 14 to further explain the different posture detection techniques being used in the classification of sitting postures. | | | |
| **Comments 3:** At present, the sitting posture pattern is characterized individually for each user. The  conclusion of the detection analysis survey is not sufficient for the review. | | | |
| **Response 3**: [To be added…] | | | |
| **Comments 4:** In addition, the discussion section, lines 389-393 and lines 419-423, should be moved to the previous chapter, as Figures 8 and 9 show only the results of the reviewed data not been reviewed | | | |
| **Response 4:** We genuinely appreciate your recommendation of moving the highlighted paragraphs to the previous chapter. However, we would argue that it should remain within the “Discussion” chapter. This chapter aims at discussing our overall findings retrieved from all the relevant research studies used in the review. Furthermore, we believe that the section that was highlighted coincides with this by informing the reader in regard to the popularity of the sensor technology and classification algorithm being used among the research studies found. | | | |