

**Review Form 3**

Journal Name:	<b>Asian Journal of Research in Computer Science</b>
Manuscript Number:	<b>Ms_AJRCOS_120764</b>
Title of the Manuscript:	<b>Advanced Battery Management: Forecasting Health, State of Charge &amp; Maintenance Needs Using AI &amp; ML Models (LSTM, Gradient Boosting, SVR, Random Forest)</b>
Type of the Article	

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**PART 1: Review Comments**

<b>Compulsory</b> REVISION comments	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<p>Please write few sentences regarding the importance this manuscript for scientific community. Why do you like (or dislike) this manuscript? Minimum 3-4 sentences may be required for this part.</p>	<p>Advanced Battery Management using AI and ML models such as LSTM, Gradient Boosting, SVR, and Random Forest offers precise health forecasting, enhancing battery lifespan and reliability. Accurate State of Charge estimation optimizes energy usage and efficiency. Predictive maintenance reduces downtime and operational costs by anticipating failures. These technologies enable smarter energy management, crucial for renewable energy integration and electric vehicle performance.</p>	
<p>Is the title of the article suitable? (If not please suggest an alternative title)</p>	<p>AI-Driven Battery Management: Health Forecasting, State of Charge Prediction, and Maintenance Optimization with LSTM, Gradient Boosting, SVR, and Random Forest Models</p>	
<p>Is the abstract of the article comprehensive? Do you suggest addition (or deletion) of some points in this section? Please write your suggestions here.</p>	<p>The abstract provided is comprehensive, but there are several issues that could be addressed for clarity and conciseness:</p> <ul style="list-style-type: none"> <li>Overly Detailed: The abstract is quite long and includes detailed methodologies that might overwhelm the reader. Abstracts should be concise and focus on key points.</li> <li>Repetition: Some points are repeated or could be combined to improve readability.</li> <li>Lack of Specific Results: While it mentions significant advancements, it doesn't provide specific results or metrics to back up these claims.</li> <li>Scope Creep: The abstract touches on too many implications and applications, which can dilute the main focus of the paper.</li> <li>Flow and Structure: The flow can be improved for better readability and impact.</li> </ul>	
<p>Are subsections and structure of the manuscript appropriate?</p>	<p>Yes</p>	
<p>Please write few sentences regarding the scientific correctness of this manuscript. Why do think that this manuscript is scientifically robust and technically sound? Minimum 3-4 sentences may be required for this part.</p>	<p>The manuscript titled "Advanced Battery Management: Forecasting Health, State of Charge &amp; Maintenance Needs Using AI &amp; ML Models (LSTM, Gradient Boosting, SVR, Random Forest)" demonstrates scientific robustness and technical soundness through its comprehensive use of advanced machine learning techniques and rigorous evaluation metrics. The inclusion of well-established models like Stacked LSTM networks, Random Forests, Gradient Boosting, and SVR ensures the reliability of predictions for battery health, State of Charge, and maintenance needs. Additionally, the application of advanced time series analysis methods like ARIMA and SARIMA for feature engineering underscores the technical depth of the study. The manuscript's thorough methodological approach and significant advancements in prediction accuracy highlight its contribution to the field of energy storage and management.</p>	
<p>Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</p>	<p>Yes</p>	

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<p>Minor REVISION comments</p> <p><b>Is language/English quality of the article suitable for scholarly communications?</b></p>	<p>Proof read is required</p>	
<p><b><u>Optional/General</u></b> comments</p>	<p>The manuscript titled "Advanced Battery Management: Forecasting Health, State of Charge &amp; Maintenance Needs Using AI &amp; ML Models (LSTM, Gradient Boosting, SVR, Random Forest)" presents a significant contribution to the field of energy storage and management. Here are some general comments on the manuscript:</p> <p><b>Innovative Approach:</b> The manuscript introduces a novel application of various machine learning techniques, including LSTM, Gradient Boosting, SVR, and Random Forests, in the context of battery management. This multi-model approach enhances the robustness and accuracy of predictions.</p> <p><b>Comprehensive Methodology:</b> The study employs a thorough and well-documented methodology, integrating advanced feature engineering and rigorous evaluation metrics. This comprehensive approach ensures the scientific validity and reliability of the findings.</p> <p><b>Significant Results:</b> The manuscript reports substantial advancements in State of Charge prediction accuracy and provides valuable insights into overall battery health assessment. The ability to anticipate maintenance needs is particularly noteworthy, as it can significantly reduce downtime and operational costs.</p> <p><b>Practical Implications:</b> The research has profound practical implications, particularly for industries reliant on energy-intensive processes such as manufacturing and electric vehicle servicing. By optimizing energy usage and enhancing service efficiency, the findings support sustainable practices and foster innovation.</p> <p><b>Clarity and Structure:</b> The manuscript is well-organized, with a clear structure that guides the reader through the introduction, methodology, results, and implications. However, some sections could be condensed for better readability and to avoid overwhelming the reader with too much detail.</p> <p><b>Future Work:</b> The manuscript could benefit from a discussion on potential future work, including the exploration of other machine learning models or hybrid approaches, and the application of the proposed methods in real-world scenarios.</p> <p>Overall, the manuscript is scientifically robust and technically sound, providing a valuable contribution to the field of advanced battery management. The integration of multiple machine learning models and time series analysis techniques represents a significant step forward in predicting battery health, State of Charge, and maintenance needs.</p>	

**PART 2:**

	<p><b>Reviewer's comment</b></p>	<p><b>Author's comment</b> (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)</p>
<p><b>Are there ethical issues in this manuscript?</b></p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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