|  |
| --- |
|  |
| Book Name: | [Science and Technology: Developments and Applications](https://www.bookpi.org/bookstore/product/science-and-technology-developments-and-applications-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_5116** |
| Title of the Manuscript:  | **Federated Learning for Secure Genomic Research: Privacy-Preserving AI Solutions for Precision Medicine** |
| Type of the Article | **BOOK CHAPTER** |

|  |
| --- |
| PART 1: Comments |
|  | Reviewer’s comment**Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **The manuscript discusses the importance of Federated Learning (FL) in genomic studies, its privacy-preserving advantages in line with data protection regulations like GDPR and HIPAA. Considering the fact of maintaining the genomic data security, the research is pertinent to the scientific community and makes contributions towards advancements in secure AI-based precision medicine.** |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | **The title is according to the context of the research however, a more consice title options could be:****1. Federated Learning in Genomics: A Secure Path to AI-Driven Precision Medicine****2. Protecting Genomic Privacy with AI: How Federated Learning is Changing Medical Research** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **The abstract is comprehensive and well-structured but could be improved by explicitly stating the key contributions of the study in a more concise manner. It would be beneficial to clearly outline the research gap, methodology, and main findings specifically.** |  |
| **Is the manuscript scientifically, correct? Please write here.**  | **The manuscript is scientifically strong, and provide a thorough review of privacy-preserving techniques in FL. The two techniques: Homomorphic Encryption (HE) and Differential Privacy (DP) are well-defined and they enhance the technical depth of study. However, it would be helpful to include a comparison of different privacy-preserving methods in a tabular format for better readability.** |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | **The manuscript includes a considerable number of references, many of which are recent (2022–2025). However, additional references on practical FL applications in real-world genomic projects would further strengthen the literature review.****Suggested additional references:****1. Recent case studies of FL implementations in genomic research.****2. Studies evaluating FL performance in comparison with centralized models.** |  |
| Is the language/English quality of the article suitable for scholarly communications? | **The manuscript is well-written with clear technical explanations. However, minor grammatical improvements and restructuring of long sentences would enhance readability. Some areas where clarity could be improved:****1. The introduction could better define the problem statement before discussing FL’s advantages.****2. The section on privacy-preserving techniques should integrate real-world examples for better comprehension.** |  |
| Optional/General comments | **1. Strengthen the discussion on real-world FL applications in genomic research.****2. Improve readability by restructuring long sentences and clarifying technical terms.****3. Provide a tabular comparison of privacy-preserving techniques.****4. The section numbers/heading need to be verified as the privacy-preserving techniques is included in section III of flowchart it should be included in some other section****5. The figure 1 in the manuscript should be referenced a it is from the below given source:****https://www.mdpi.com/2073-4425/15/12/1650#:~:text=2.-,The%20Promise%20of%20Federated%20Learning%20in%20Genomics,a%20central%20server%20%5B12%5D.** |  |

|  |
| --- |
| **PART 2:**  |
|  | Reviewer’s comment | Author’s comment *(if agreed with the 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 detail)* |  |

**Reviewer details:**

**Aneela Nargis, DHA Suffa University, Pakistan**