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| 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** |

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| 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.** | This manuscript addresses a critical gap in genomic research by proposing federated learning (FL) as a privacy-preserving framework. It integrates advanced techniques like homomorphic encryption (HE) and differential privacy (DP), which are vital for complying with stringent regulations (GDPR, HIPAA). The discussion on ethical, legal, and future challenges (e.g., quantum-safe cryptography) provides actionable insights for researchers and policymakers. This work is timely, given the rise of precision medicine and global data-sharing initiatives. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | The title is appropriate and clearly reflects the manuscript’s focus. No changes needed |  |
| 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 effectively summarizes the scope, methods, and implications. To enhance clarity: | Revised abstract to include a brief mention of case studies (e.g., rare disease research) and emphasized practical outcomes of FL adoption. | | 1. Add a sentence on real-world applications (e.g., Meduri et al.’s rare disease use case). | | | 2. Strengthen the concluding statement to highlight translational impact. |  |
| **Is the manuscript scientifically, correct? Please write here.**  | The content is scientifically robust. However: | Clarified claims about DP’s computational efficiency vs. HE and expanded on quantum threats in the “Future Directions” section. | | 1. Validate the claim that DP is “more efficient” than HE—cite computational benchmarks (e.g., Shi et al., 2022). | | | 2. Provide context on quantum threats to justify quantum-resistant protocols. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | References are recent and relevant. Suggested additions: | Added foundational FL papers (McMahan et al., 2017) and a survey on FL in healthcare (Rieke et al., 2020). | | 1. McMahan, H. B. et al. (2017). \*Communication-Efficient Learning of Deep Networks from Decentralized Data\*. AISTATS. | | | 2. Rieke, N. et al. (2020). \*The Future of Digital Health with Federated Learning\*. NPJ Digital Medicine |  |
| Is the language/English quality of the article suitable for scholarly communications? | Minor grammatical errors (e.g., “incompliance” → “non-compliance”) and overly complex sentences. | Edited for clarity and conciseness; proofread for grammar |  |
| Optional/General comments |  |  |

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| **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:**

**Gilbert Roland, Mauritius**