Future Scope

The future scope of our research, as delineated from the findings and methodologies of these studies, is expansive and multifaceted. There is significant potential for further development and refinement of the mathematical models and control strategies, particularly in the realm of personalized medicine, where individual patient data could be used to tailor treatments more effectively. The novel weight updating algorithm and the Modified Firefly Algorithm, demonstrated to be highly effective in classifying breast cancer histopathology images, offer promising avenues for application in other types of cancer detection and a broader range of medical imaging tasks. Additionally, the integration of these advanced algorithms with emerging technologies in AI and machine learning, such as deep learning and neural network fine-tuning, presents an exciting opportunity to enhance diagnostic accuracy and treatment efficacy. Furthermore, expanding the dataset to include a wider variety of cases and conditions could significantly improve the robustness and generalizability of these models, paving the way for their application in diverse clinical settings and populations.