

Abstract– Neural Networks (NNs), a powerful tool for identifying non-linear systems, derive their computational power through a parallel distributed structure. The Physics-Informed Neural Network (PINN) technique can solve the Partial Differential Equation (PDE) in the Fisher-Kolmogorov equation. By testing several hyperparameter changes, the formula is correct, and the visualization results can be consistent. Shows that an accurate value can be obtained from the results of the Mean Squared Error (MSE) on the formula loss value (loss f) and data loss (loss u). In experiment 1 the MSE obtained was 0.00001657 (Loss f) and 0.00000038 (loss u), as well as the MSE values obtained in experiment 4, is 0.00005865 (Loss f) and 0.00000216 (Loss u). It can be said to be accurate if the MSE value is close to 0. A formula is proven correct if it displays consistent data in random input data, but with the condition that it uses the same parameters. The author conducted research to simulate the Fisher-Kolmogorov equation with deep learning using the PINN technique. So the purpose of the research conducted was to simulate the Fisher-Kolmogorov equation with the deep learning method using the PINN technique. From the research, it can be concluded that Fisher-Kolmogorov's equation proves to be true if the simulation is carried out in deep learning and produces a visualization that is consistent with the functions used for visualization.

Keywords: Simulation, Neural Network (NN); Physics-Informed Neural Network (PINN); Fisher-Kolmogorov; Partial Differential Equations (PDEs); Mean Squared Error (MSE).