Stochastic Gradient Descent Classifier

Task 3

For my model I have used Stochastic Gradient Descent classifier. I have checked the official documentation of it. SGD is a step-by-step method to optimize a goal function, so its typically the cost function in the ML models. However, unlike traditional gradient descent, which computes the gradient descent data using the entire data set, this approach only a small batch of training examples at each step of iteration. Therefore, it significantly reduces the computational load, and provides faster convergence for large-scale datasets, which is crucial for this task. One of its important features is early stopping, it is a technique that halts the training process if the model's performance on a validation set does not improve for a specified number of iterations. Henc, it helps prevent overfitting and saves computational resources. Furthermore, of essential factor is the cross validation, I have used 5-fold cross validation, so the dataset was divided into 5 subsets. Therefore, the model is trained on the 4 subsets and tested on the remaining one, and the process is repeated 5 times, so this method helps to have a more robust estimate of the model's performance. Above, you can see the link of official documentation of SGD. https://scikit-learn.org/stable/modules/generated/sklearn.linear_model.SGDClassifier.html