

ASSIGNMENT

Use an artificial neural network (ANN) to predict the compressive strength of concrete. You will use the Python programming language and the Keras library to build and train your ANN model. You will also evaluate the performance of your model using various metrics.

Instructions:

1. Use the dataset which is provided
2. Split the dataset into a training set and a test set. The training set should be 80% of the dataset, and the test set should be 20% of the dataset.
3. Build an ANN model with the following architecture:
 - Input layer: 9 neurons
 - Hidden layer: 10 neurons
 - Output layer: 1 neuron
4. Choose a loss function and an optimizer. The most common loss function for regression is the mean squared error (MSE). The most common optimizer for regression is the ADAM optimizer.
5. Train the ANN model for 100 epochs.
6. Evaluate the performance of the ANN model using the test set. The Keras library will calculate the mean squared error (MSE) between the predicted values and the actual values. The MSE is a measure of the accuracy of the ANN model.
7. Report the MSE of the ANN model.

Bonus:

1. Try different model architectures and hyperparameters to improve the performance of the ANN model.
2. Use the ANN model to predict the compressive strength of concrete with different compositions.