

## Assignment 1

### ANN

Use sonar.csv file

#### Description of file

The file "sonar.mines" contains 111 patterns obtained by bouncing sonar signals off a metal cylinder at various angles and under various conditions. The file "sonar.rocks" contains 97 patterns obtained from rocks under similar conditions. The transmitted sonar signal is a frequency-modulated chirp, rising in frequency. The data set contains signals obtained from a variety of different aspect angles, spanning 90 degrees for the cylinder and 180 degrees for the rock.

Each pattern is a set of 60 numbers in the range 0.0 to 1.0. Each number represents the energy within a particular frequency band, integrated over a certain period of time. The integration aperture for higher frequencies occur later in time, since these frequencies are transmitted later during the chirp.

The label associated with each record contains the letter "R" if the object is a rock and "M" if it is a mine (metal cylinder).

Create a ANN with 60 neuron in i/p layer and 1 neuron in o/p layer.

Add 2 hidden layers with number of neurons 70 and 50 respectively

Write a function create\_model to design base model

**# evaluate model with standardized dataset**

```
kfold = StratifiedKFold(n_splits=10, shuffle=True)
```

```
results = cross_val_score(estimator, X, encoded_Y, cv=kfold)
```

#Use GridSearchCV, to test for following hyper parameters.

```
batchSize = [10, 20, 40, 60, 80, 100]
```

```
epochs = [10, 70, 50, 100]
```