

Practical 3

Topics in Deep Learning

ANN Model for Regression and Classification

❖ Dataset –

- **Heart dataset**
- **Mobile dataset**
- **Startup 50 dataset**

❖ Steps to build ANN models –

1. Load the required libraries and modules
2. Load the data and apply pre-processing - In this step, we will process and visualize data which will help us to gain insight into the data.
3. Create an array for data features and response/output variable
4. Split train, test, validation data
5. Define neural network model - We need to specify the number of hidden layers in the neural network and their size, the input and output size.
6. Define loss function, optimizer and other hyper parameters
7. Compile and fit keras model
8. Visualize training, validation loss and accuracy
9. Predict the test data and compute evaluation metric

❖ Steps to perform -

- **Implement ANN model for classification where you classify between chance of heart attack or not.**

You will use first 13 attributes to as input the network and later try to implement the model with several layers and output layer will comprise of 2 neurons so model reduce from 13 to 2 with few hidden layers.

- Implement ANN Model for multi-classification where you will classify mobiles into various price range based on multiple features. You have to train the network for all total 20 attributes.
- Implement ANN model for regression to predict battery power based on other mobile features.
- Predict the profit values on 50_startups dataset for each company using ANN model.
- Initially you can try with only 2-3 layers ANN model and later try with around 30 layers to see its effect on performance.