Data Collection and Preprocessing Phase

Date	15 July 2024
Team ID	xxxxxx
Project Title	xxxxxx
Maximum Marks	6 Marks

Preprocessing Template

The images will be preprocessed by Normaliztion, Handling Missing Values, Splitting Dataset and Calculating Accuracy. These steps will enhance data quality, promote model generalization, and improve convergence during neural network training, ensuring robust and efficient performance.

Section	Description
Data Overview	The dataset consists of behavioral features and individual characteristics for autism screening. It includes columns for age, gender, various scores, and binary features related to ASD detection.
Normalization	Normalize numerical feature values to a common scale, e.g., between 0 and 1 or standardize to have a mean of 0 and a standard deviation of 1.
Handling missing values	Handling missing values is crucial for ensuring the quality and reliability of your dataset. Missing values can skew results and impact the performance of machine learning models. The common strategies to handle missing values include:
Splitting Dataset	Splitting the dataset into training and testing subsets allows you to evaluate the performance of your machine learning model on unseen data. Typically, the dataset is divided into a training set (used to train the model) and a test set (used to evaluate the model's performance).

Calculating Accuracy	Accuracy measures the proportion of correctly classified instances out of the total instances. It's a common metric for evaluating classification models. High accuracy indicates that the model performs well on the given dataset.

Data Preprocessing Code Screenshots

| Loading Data | ```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
``` ```python
data=pd.read_csv("Autism_Data.arff")
``` ```python
data.head(10)
``` |
|---|---|
| Normalization | ```python
from sklearn.model_selection import train_test_split

from sklearn.linear_model import LogisticRegression

from sklearn.metrics import classification_report

from sklearn.svm import SVC

from sklearn.tree import DecisionTreeClassifier

from sklearn.neighbors import KNeighborsClassifier

from sklearn.ensemble import RandomForestClassifier

from sklearn.metrics import accuracy_score

from sklearn import metrics
``` |
| Handling missing values | ```python
data.replace("?",np.nan,inplace=True)
``` |
| Splitting Dataset | ```python
from sklearn.model_selection import train_test_split
``` ```python
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=101)
``` |
| Calculating Accuracy | ```python
from sklearn.metrics import classification_report

accuracy_lgr = accuracy_score(y_test,y_pred_lgr)
print('Accuracy LGR:', accuracy_lgr*100)
``` |