Project Development Phase

Sprint - 1

Date	22 October 2022
Team ID	PNT2022TMID18280
Project Name	A Novel Method for Handwritten Digit Recognition
Maximum Marks	4 Marks

Sprint - 1

Team Id : PNT2022TMID18280

Importing Packages

In [1]:
```
from keras.datasets import mnist
import matplotlib.pyplot as plt
from keras.utils import np_utils
```

Loading the data

In [3]:
```
(X_train,y_train),(X_test,y_test) =mnist.load_data()
```

Analysing the data

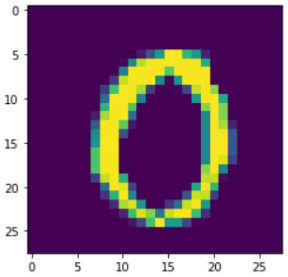
In [4]:
```
print(X_train.shape)
print(X_test.shape)
```

```
(60000, 28, 28)
(10000, 28, 28)
```

In [5]:
```
print("The label value is ",y_test[13])
plt.imshow(X_test[13])
```

```
The label value is  0
```

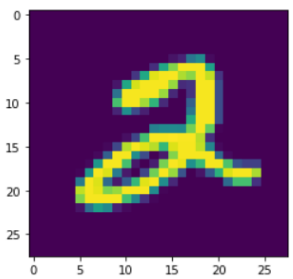
Out[5]:
```
<matplotlib.image.AxesImage at 0x1847d1a8c40>
```



In [6]:
```
print("The label value is ",y_train[5])
plt.imshow(X_train[5])
```

```
The label value is  2
```

Out[6]:
```
<matplotlib.image.AxesImage at 0x1847d2aa8e0>
```



Data Preprocessing

In [7]:
```
X_train = X_train.reshape(60000, 28, 28, 1).astype('float32')
X_test = X_test.reshape(10000, 28, 28, 1).astype('float32')
```

In [8]:
```
number_of_classes= 10
y_train = np_utils.to_categorical(y_train,number_of_classes)
y_test = np_utils.to_categorical(y_test,number_of_classes)
```

In [9]:
```
print("After encoding the value 0 of y_test[13] become", y_test[13])
```

```
After encoding the value 0 of y_test[13] become [1. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
```