

A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM

Analyzing the Data

```
print(X_train.shape)
```

```
print(X_test.shape)
```

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

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

```
print(X_train[2])
```

```
[[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0  0 67 232 39  0  0  0  0  0]
 [ 0  0  0  0 62 81  0  0  0  0  0  0  0  0  0  0  0  0
   0  0 120 180 39  0  0  0  0  0]
 [ 0  0  0  0 126 163  0  0  0  0  0  0  0  0  0  0  0  0
   0  2 153 210 40  0  0  0  0  0]
 [ 0  0  0  0 220 163  0  0  0  0  0  0  0  0  0  0  0  0
   0 27 254 162  0  0  0  0  0  0]
 [ 0  0  0  0 222 163  0  0  0  0  0  0  0  0  0  0  0  0
   0 183 254 125  0  0  0  0  0  0]
 [ 0  0  0 46 245 163  0  0  0  0  0  0  0  0  0  0  0  0
   0 198 254 56  0  0  0  0  0  0]
 [ 0  0  0 120 254 163  0  0  0  0  0  0  0  0  0  0  0  0
   23 231 254 29  0  0  0  0  0  0]
 [ 0  0  0 159 254 120  0  0  0  0  0  0  0  0  0  0  0  0
   163 254 216 16  0  0  0  0  0  0]
 [ 0  0  0 159 254 67  0  0  0  0  0  0  0  0  0 14 86 178
   248 254 91  0  0  0  0  0  0  0]
 [ 0  0  0 159 254 85  0  0  0 47 49 116 144 150 241 243 234 179
   241 252 40  0  0  0  0  0  0  0]
 [ 0  0  0 150 253 237 207 207 207 253 254 250 240 198 143 91 28 5
   233 250  0  0  0  0  0  0  0  0]
 [ 0  0  0  0 119 177 177 177 177 177 98 56  0  0  0  0  0 102
   254 220  0  0  0  0  0  0  0  0]
 [ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
   254 137  0  0  0  0  0  0  0  0]
```

```

[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 254 57  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 254 57  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 255 94  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 254 96  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 254 153  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 169
 255 153  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 96
 254 153  0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0
 0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0
 0  0  0  0  0  0  0  0  0  0]
[ 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 0
 0  0  0  0  0  0  0  0  0  0]]

```

```
Print(y_train[2])
```

```
4
```

```
plt.imshow(X_train[2])
```

