# Image Classification of Tradition Indian Clothing

Kelly Butler

Lehenga (the skirt) with a blouse and a dupatta

Nehru jacket

Saree

Women’s mojaris

Men’s kurta

# Data From Kaggle

91166 training images 7500 validation images

7500 test images

| Class Label | Number of Images |
|---|---|
| Women’s kurtas | 11694 |
| Sarees | 10791 |
| Blouses | 9174 |
| Leggings and Salwars | 7787 |
| Men’s kurtas | 6951 |
| Dupattas | 6587 |
| Nehru jackets | 6491 |
| Lehenga | 5753 |
| Gowns | 5211 |
| Petticoats | 4441 |
| Dhoti pants | 4145 |
| Palazzos | 3375 |
| Women’s mojaris | 3228 |
| Sherwanis | 2992 |
| Men’s mojaris | 2546 |

4

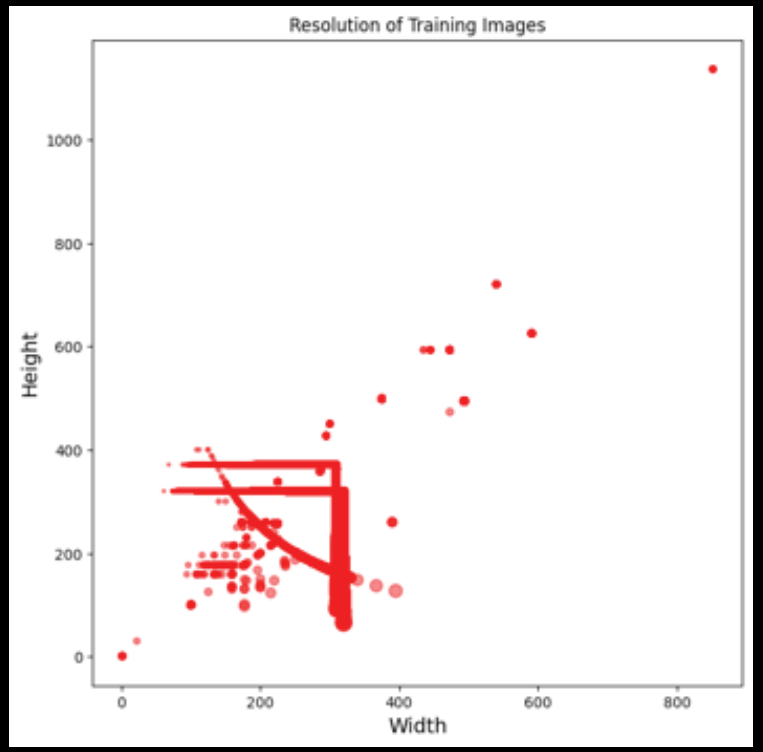



**Figure 1**. Image resolution in the training set.

Training data

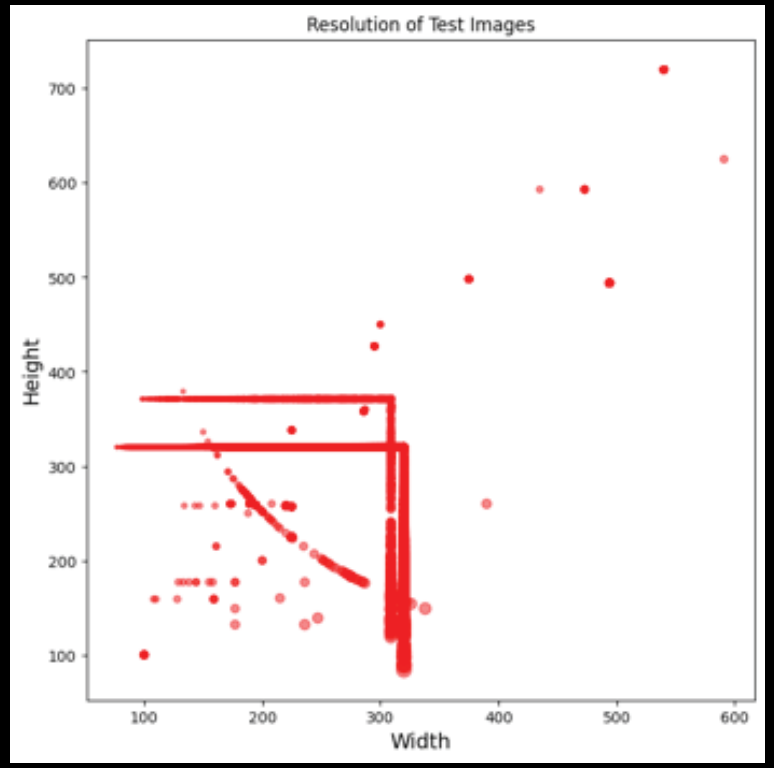



**Figure 3**. Image resolution in the test set.

Original test data

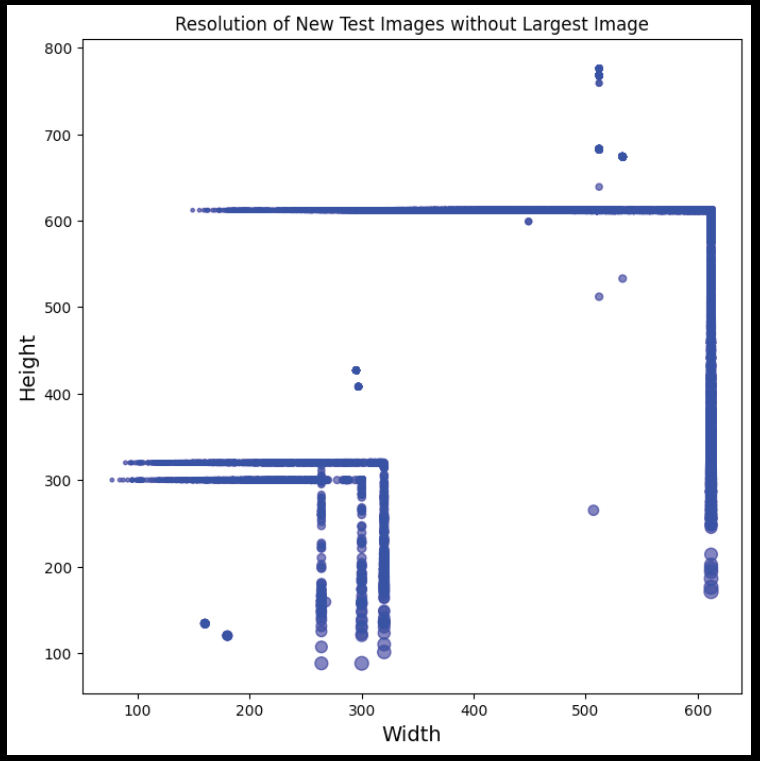
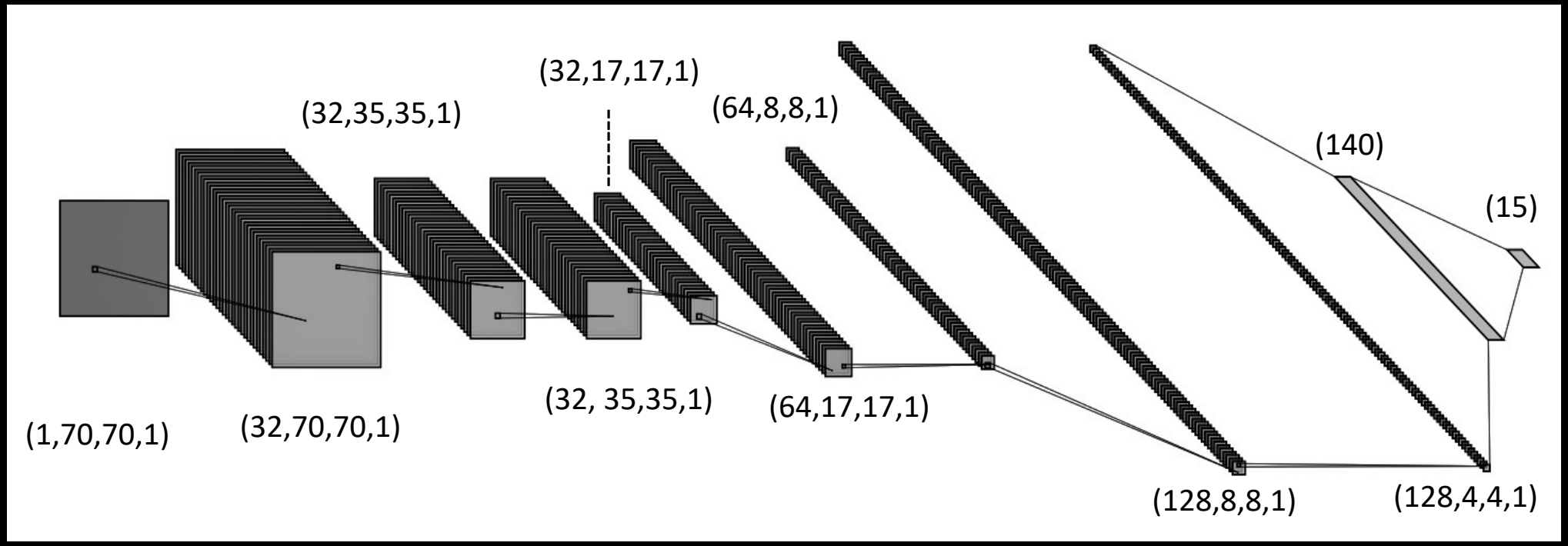



**Figure 4**. Image resolution in the new test set.

New test data

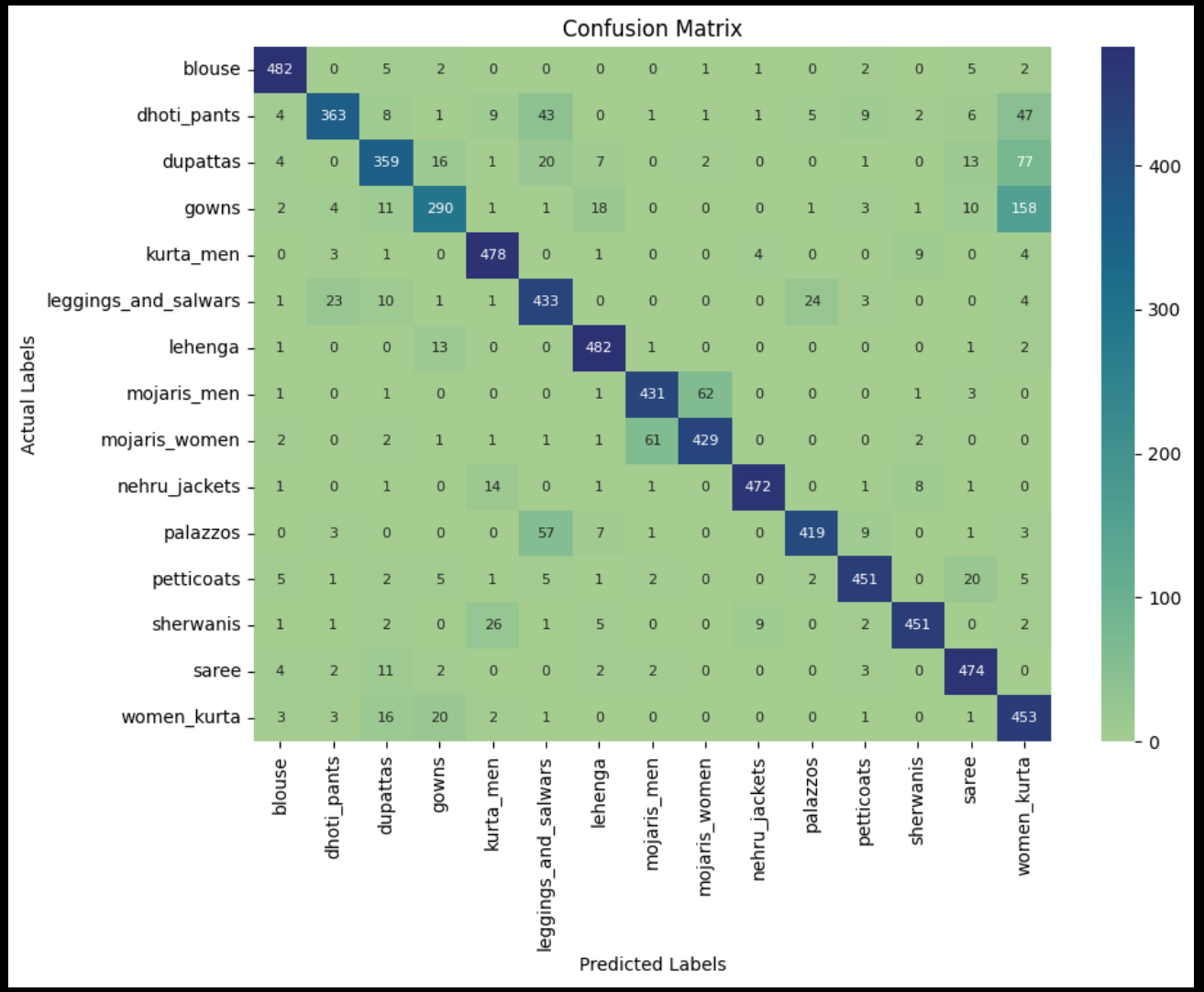
# Image sizes

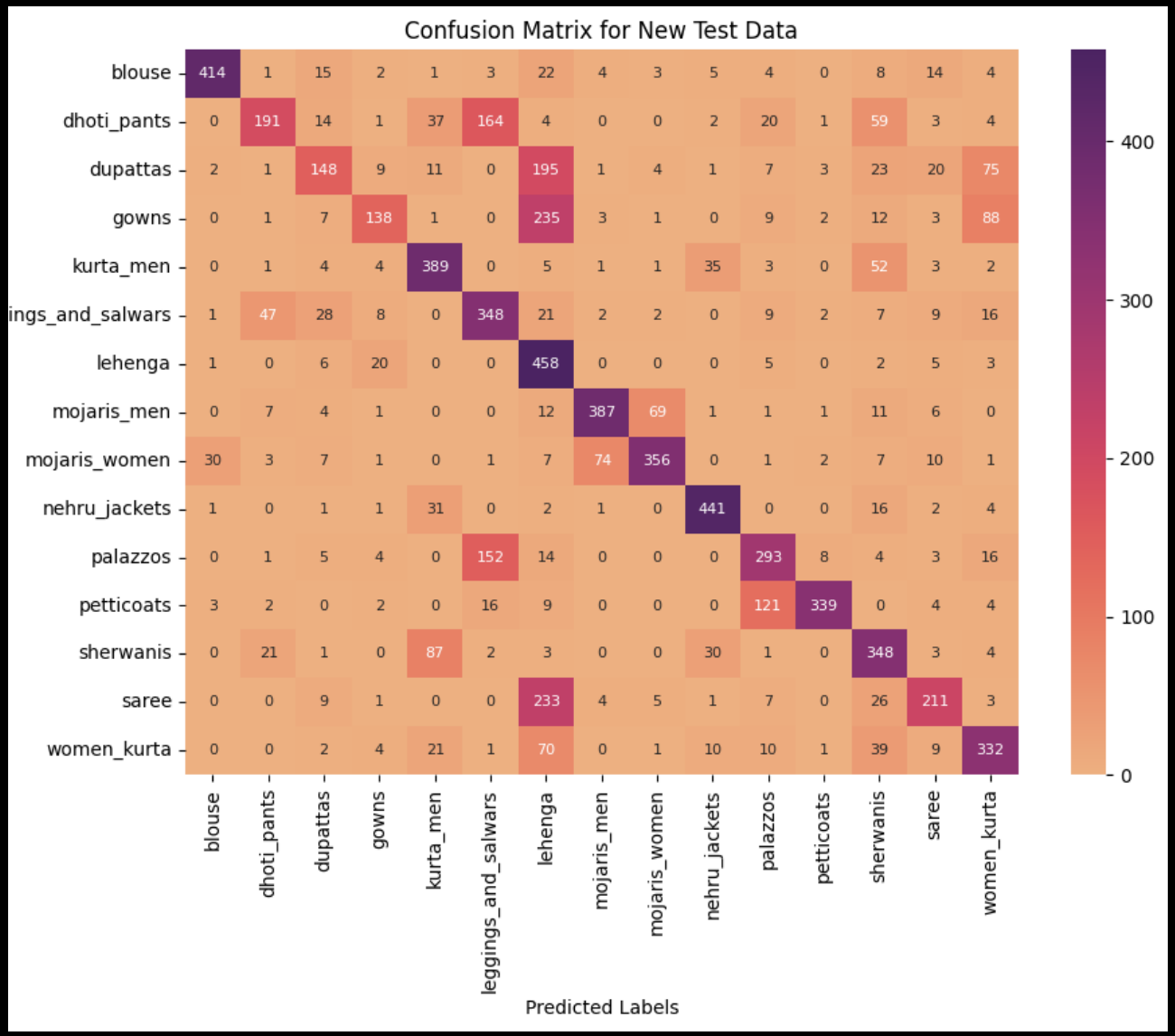

(32,17,17,1)
(32,35,35,1)
(64,8,8,1)
(140)
(15)
(1,70,70,1)
(32,70,70,1)
(32, 35,35,1)
(64,17,17,1)
(128,8,8,1)
(128,4,4,1)

# Keras Model

# Metrics

| | Accuracy | Precision | Recall | F1 Score |
|---|---|---|---|---|
| **Original test dataset** | 86.23 % | 85.98 % | 84.68 % | 84.61 % |
| **New test dataset** | 63.91 % | 68.59 % | 63.91 % | 63.59 % |


Confusion Matrix
Actual Labels
Predicted Labels
blouse
dhoti_pants
dupattas
gowns
kurta_men
leggings_and_salwars
lehenga
mojaris_men
mojaris_women
nehru_jackets
palazzos
petticoats
sherwanis
saree
women_kurta
482 0 5 2 0 0 0 0 1 1 0 2 0 5 2
4 363 8 1 9 43 0 1 1 1 5 9 2 6 47
4 0 359 16 1 20 7 0 2 0 0 1 0 13 77
2 4 11 290 1 1 18 0 0 0 1 3 1 10 158
0 3 1 0 478 0 1 0 0 4 0 0 9 0 4
1 23 10 1 1 433 0 0 0 0 24 3 0 0 4
1 0 0 13 0 0 482 1 0 0 0 0 0 1 2
1 0 1 0 0 0 1 431 62 0 0 0 1 3 0
2 0 2 1 1 1 1 61 429 0 0 0 2 0 0
1 0 1 0 14 0 1 1 0 472 0 1 8 1 0
0 3 0 0 0 57 7 1 0 0 419 9 0 1 3
5 1 2 5 1 5 1 2 0 0 2 451 0 20 5
1 1 2 0 26 1 5 0 0 9 0 2 451 0 2
4 2 11 2 0 0 2 2 0 0 0 3 0 474 0
3 3 16 20 2 1 0 0 0 0 0 1 0 1 453
400
300
200
100
0


Confusion Matrix for New Test Data
blouse 414 1 15 2 1 3 22 4 3 5 4 0 8 14 4
dhoti_pants 0 191 14 1 37 164 4 0 0 2 20 1 59 3 4
dupattas 2 1 148 9 11 0 195 1 4 1 7 3 23 20 75
gowns 0 1 7 138 1 0 235 3 1 0 9 2 12 3 88
kurta_men 0 1 4 4 389 0 5 1 1 35 3 0 52 3 2
ings_and_salwars 1 47 28 8 0 348 21 2 2 0 9 2 7 9 16
lehenga 1 0 6 20 0 0 458 0 0 0 5 0 2 5 3
mojaris_men 0 7 4 1 0 0 12 387 69 1 1 1 11 6 0
mojaris_women 30 3 7 1 0 1 7 74 356 0 1 2 7 10 1
nehru_jackets 1 0 1 1 31 0 2 1 0 441 0 0 16 2 4
palazzos 0 1 5 4 0 152 14 0 0 0 293 8 4 3 16
petticoats 3 2 0 2 0 16 9 0 0 0 121 339 0 4 4
sherwanis 0 21 1 0 87 2 3 0 0 30 1 0 348 3 4
saree 0 0 9 1 0 0 233 4 5 1 7 0 26 211 3
women_kurta 0 0 2 4 21 1 70 0 1 10 10 1 39 9 332
400
300
200
100
0
blouse
dhoti_pants
dupattas
gowns
kurta_men
leggings_and_salwars
lehenga
mojaris_men
mojaris_women
nehru_jackets
palazzos
petticoats
sherwanis
saree
women_kurta
Predicted Labels

Training set:
Women’s kurta

Test set:
Gown
Predicted label:
Women’s kurta

Training set:
Women’s kurta

Test set: label Dupatta
Predicted: Women’s kurta

Women’s kurta

Palazzos

Sherwani

Blouse

Salwar with dupatta

Dhoti pants

Gown

Dupatta

Men’s mojaris