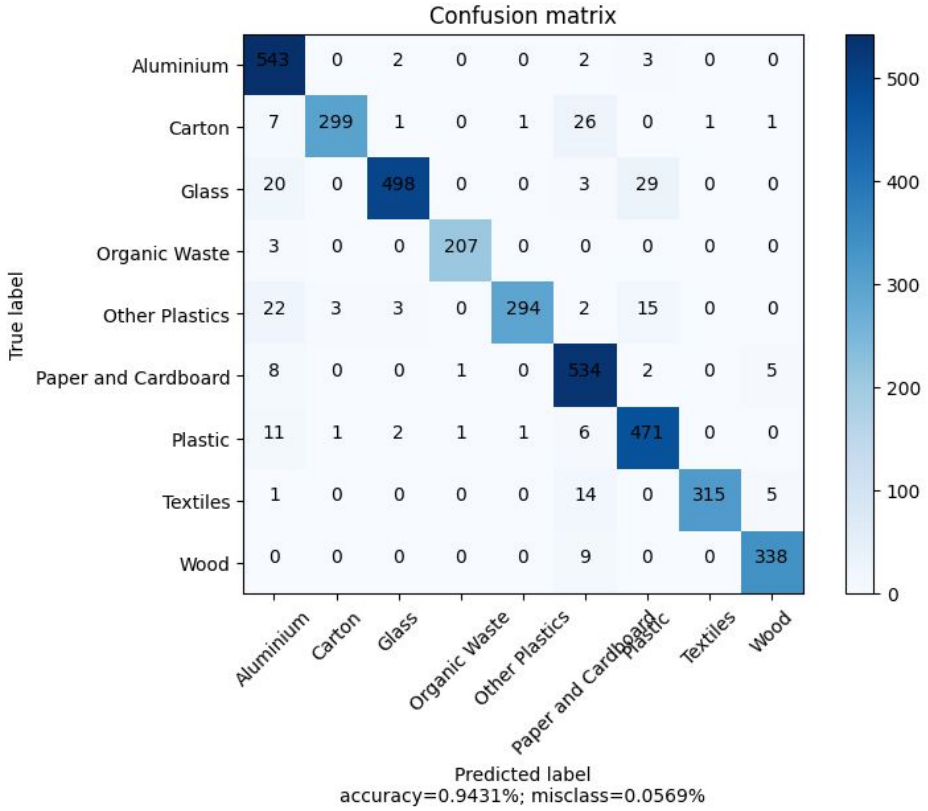
Image Classification of Waste Materials

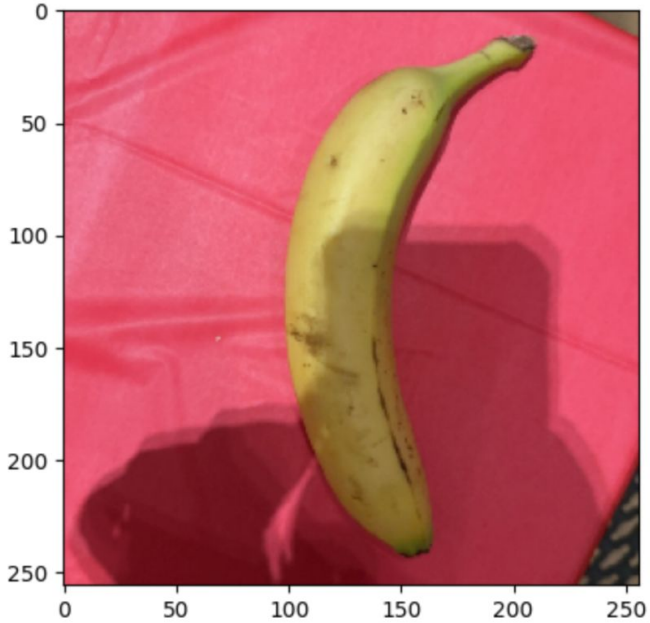
Using CNN Algorithim and Transfer Learning Model

(Built Using Model Trained by Daniel García Solla)



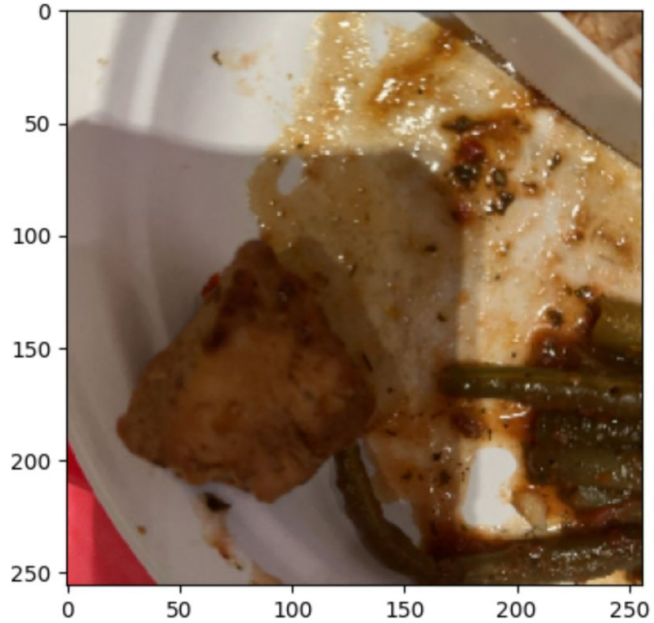
Confusion Matrix: Minimal difference between training and test accuracy

```
1/1 [==============================] - 0s 66ms/step
[ 1.845412   1.7924078  5.8348823 71.21632    8.550455   1.154631
  3.0956712  3.7990327  2.7111928]
 ['Aluminium', 'Carton', 'Glass', 'Organic Waste', 'Other Plastics', 'Paper and Cardboard', 'Plastic', 'Textiles', 'Wood
Prediction:  Organic Waste 71.21631503105164%
```



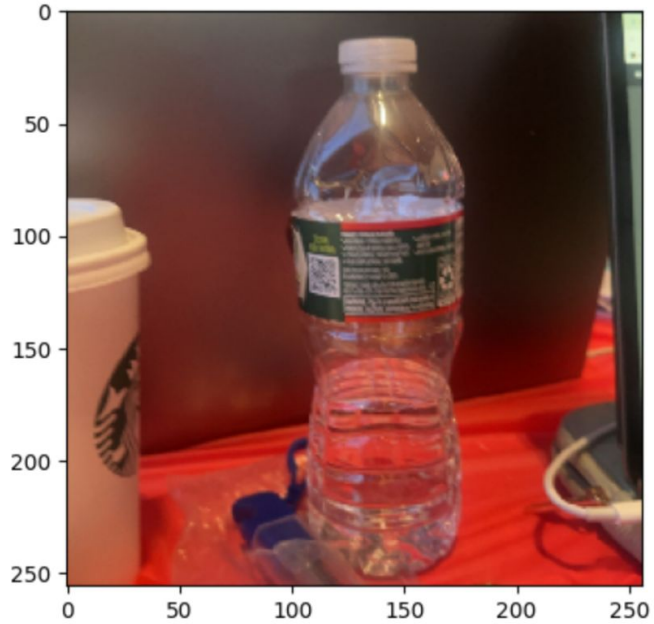
Predicts Banana as Organic Waste by 71.22 % accuracy

```
1/1 [==============================] - 0s 88ms/step
[ 3.0184944  2.1415484  1.752097  52.625893   5.252661   2.972358
  8.384422  18.07479    5.777734 ]
 ['Aluminium', 'Carton', 'Glass', 'Organic Waste', 'Other Plastics', 'Paper and Cardboard', 'Plastic', 'Textiles', 'Wood
Prediction:  Organic Waste 52.62589454650879%
```



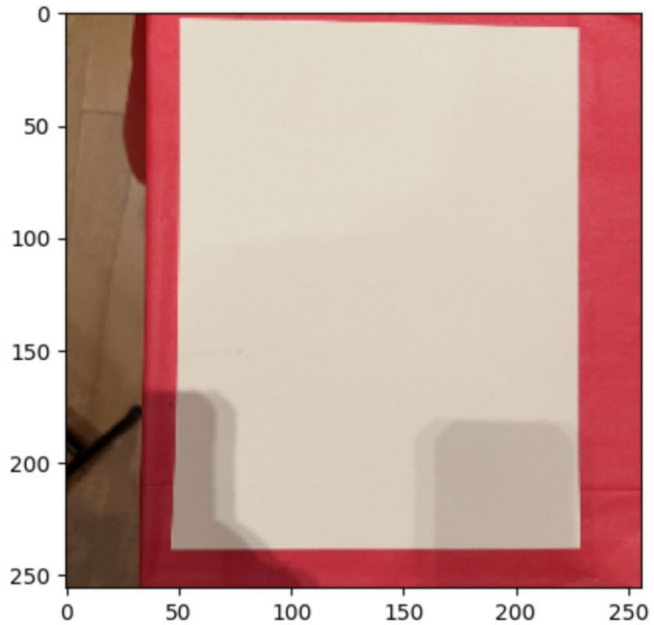
Predicts Chicken as Organic Waste by 52.62 % accuracy

```
1/1 [==============================] - 0s 49ms/step
[ 4.8972564   4.494995    3.3767245   1.1161187   8.353966    2.9580238
 72.58423     1.6445948   0.57409346]
 ['Aluminium', 'Carton', 'Glass', 'Organic Waste', 'Other Plastics', 'Paper and Cardboard', 'Plastic', 'Textiles', 'Wood
Prediction:  Plastic 72.5842297077179%
```



Predicts Plastic Bottle as Plastic by 72.58 % accuracy

```
1/1 [==============================] - 0s 38ms/step
[ 0.34649888  0.8480488   0.24908172  0.15411976  0.17967094 96.53578
  0.7063075   0.3941348   0.5863508 ]
 ['Aluminium', 'Carton', 'Glass', 'Organic Waste', 'Other Plastics', 'Paper and Cardboard', 'Plastic', 'Textiles', 'Wood
Prediction:  Paper and Cardboard 96.53578400611877%
```



Predicts Paper as Paper and Cardboard by 96.53 % accuracy

Next Steps

1. Expand the categories to be more specific in order to capture the correct category that represents its carbon footprint
2. Connect it to the camera functionality in order to process images that are captured by the user
3. Integrate it with the web app using TypeScript