

```
# import necessary libraries
import numpy as np
import cv2
from sklearn.linear_model import
LinearRegression

# Load the UAV images
image = cv2.imread('UAV_image.jpg')

# Apply image processing techniques to extract
relevant information
gray = cv2.cvtColor(image,
cv2.COLOR_BGR2GRAY)
ret, thresh = cv2.threshold(gray, 0, 255,
cv2.THRESH_BINARY_INV +
cv2.THRESH_OTSU)
contours, _ = cv2.findContours(thresh,
cv2.RETR_TREE, cv2.CHAIN_APPROX_SIMPLE)

# Extract features from the image such as
plant density, leaf area, and canopy height
plant_density = len(contours)
leaf_area = []
```

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for cnt in contours:
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```
    leaf_area.append(cv2.contourArea(cnt))
```

```
# Create a dataset with the extracted features  
and the corresponding crop yield
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data = np.column_stack((plant_density,  
leaf_area, crop_yield))
```

```
# Split the dataset into training and test sets
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```
train_data = data[:int(0.8*len(data)), :]
```

```
test_data = data[int(0.8*len(data)), :]
```

```
# Fit a linear regression model to the training  
data
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reg = LinearRegression().fit(train_data[:, :-1],  
train_data[:, -1])
```

```
# Use the model to predict the crop yield
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```
predicted_yield = reg.predict(test_data[:, :-1])
```

```
# Compare the predicted yield with the actual  
yield
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```
print('Predicted Yield:', predicted_yield)
```

```
print('Actual Yield:', test_data[:, -1])
```

