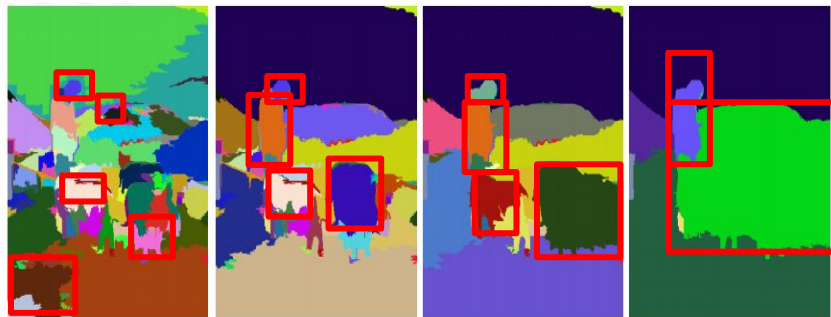


Feature Extraction in R-CNN

Region Based Convolutional Neural Network (R-CNN)

Generate Region Proposals

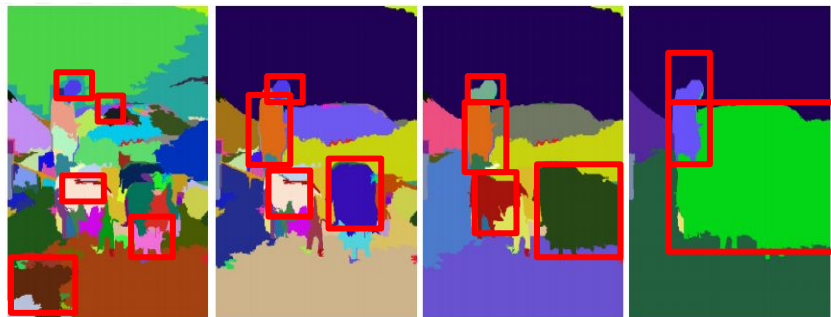
Selective Search Algorithm



Region Based Convolutional Neural Network (R-CNN)

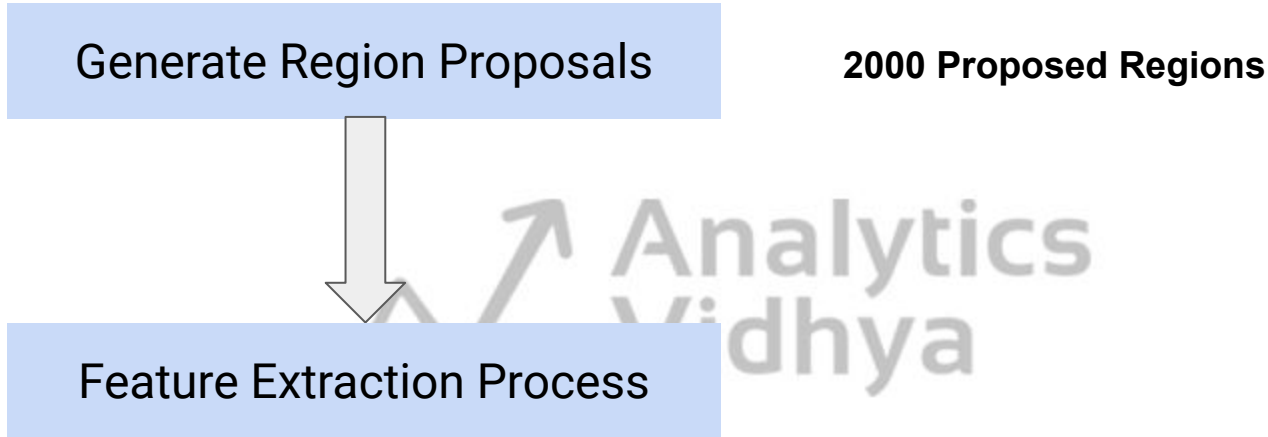
Generate Region Proposals

Selective Search Algorithm

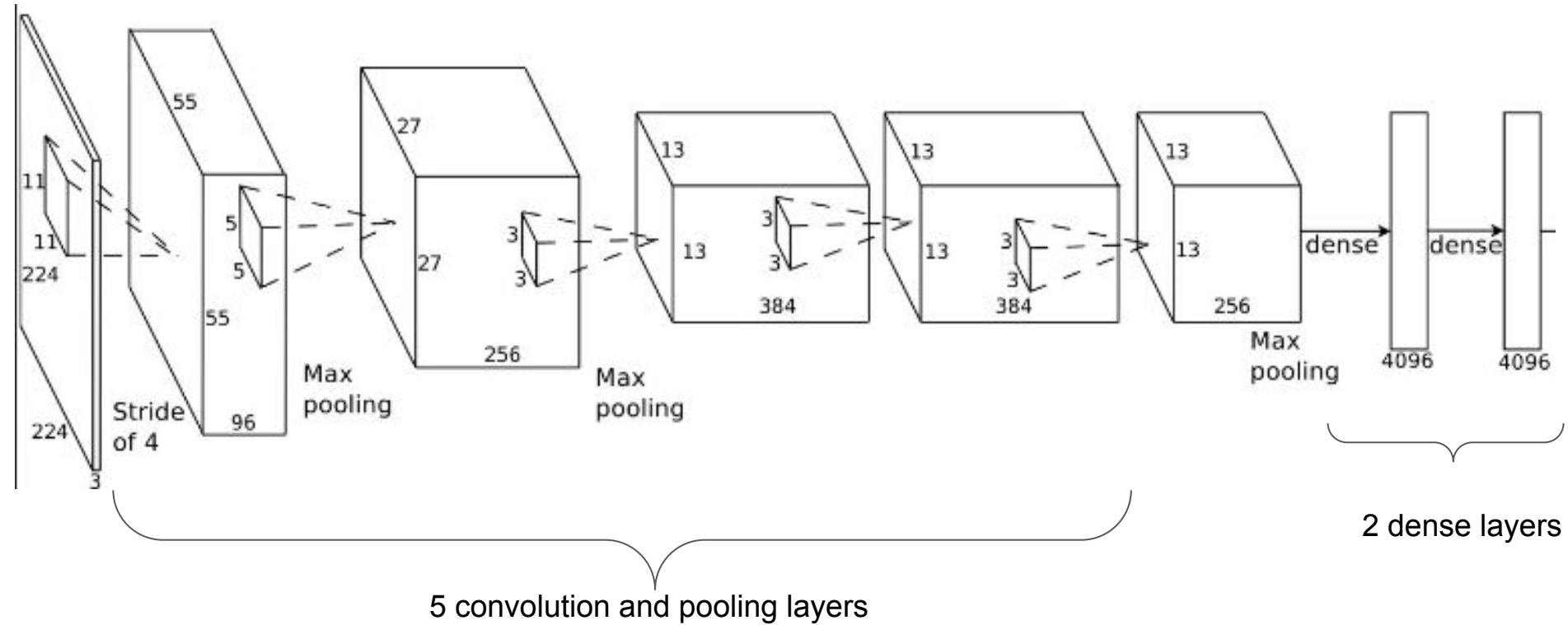


~ 2000 Proposed Regions

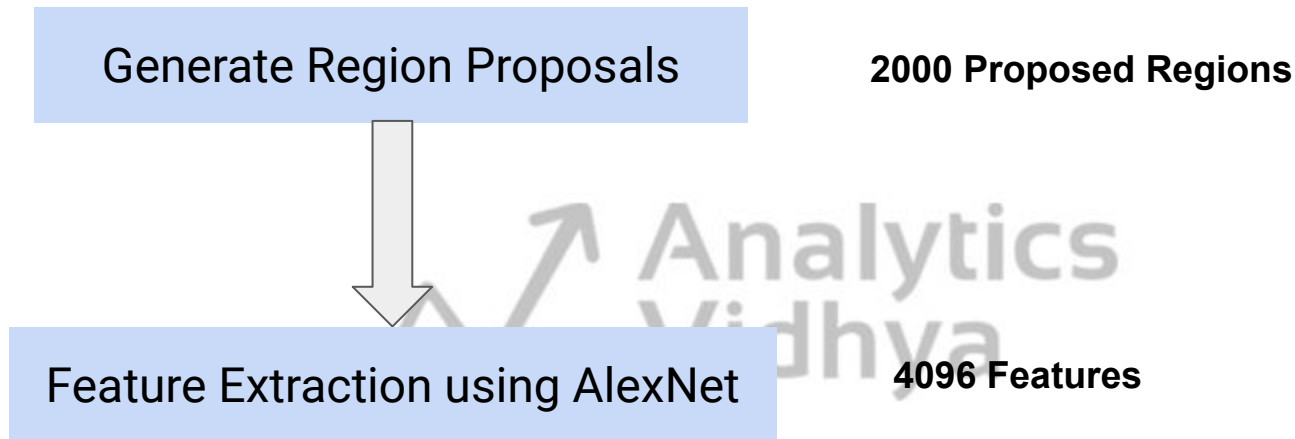
Region Based Convolutional Neural Network (R-CNN)



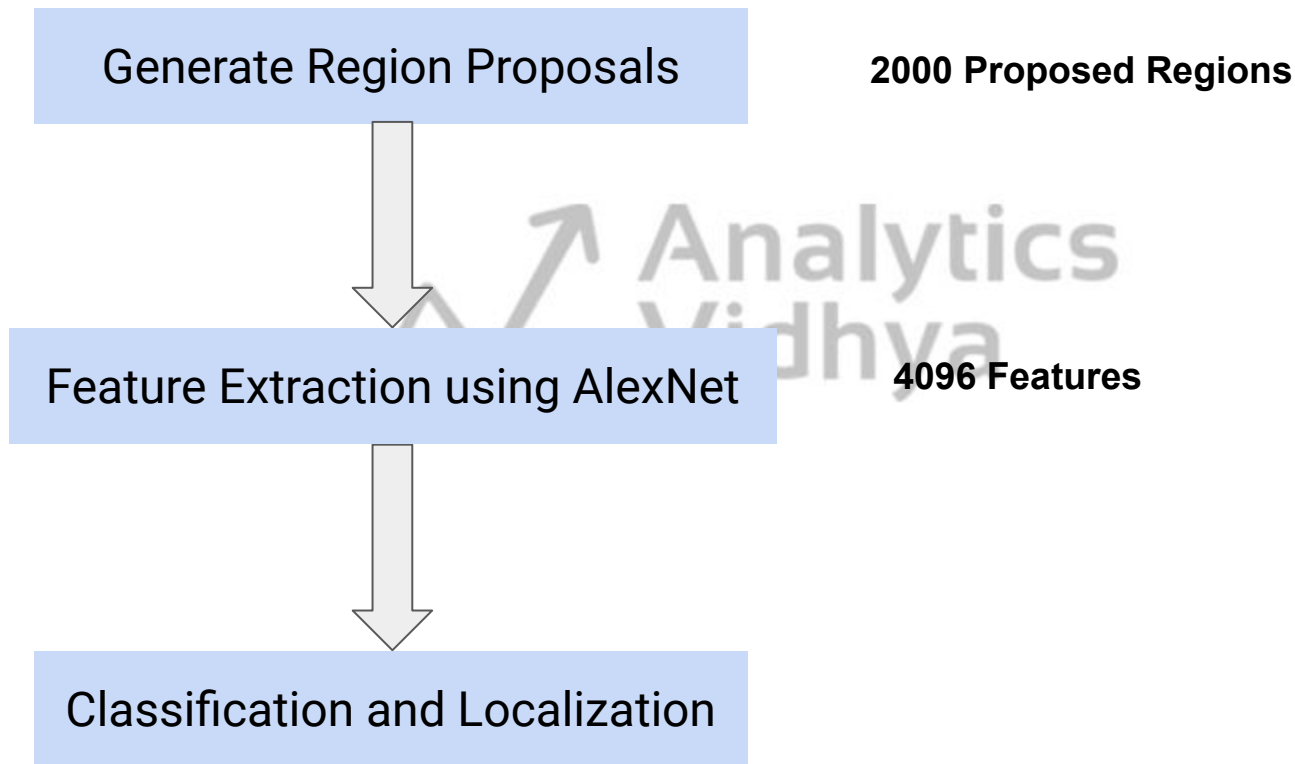
Alexnet Architecture for Feature Extraction



Region Based Convolutional Neural Network (R-CNN)



Region Based Convolutional Neural Network (R-CNN)



Classification and Localization (R-CNN)

Classification Task- Object Class

Regression Task- Object Bounding Box



Classification and Localization (R-CNN)

Classification Task- Object Class

Regression Task- Object Bounding Box

Binary SVM



Classification and Localization (R-CNN)

Classification Task- Object Class

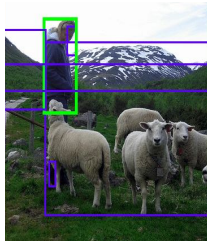
Regression Task- Object Bounding Box

Binary SVM



$x_1 \quad x_2 \quad x_3 \quad \dots \quad x_{4096}$

$y = \text{Person}$



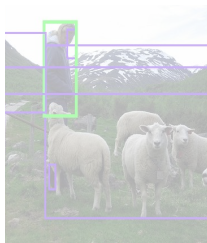
Classification and Localization (R-CNN)

Classification Task- Object Class

Binary SVM



$x_1 \quad x_2 \quad x_3 \quad \dots \quad x_{4096}$



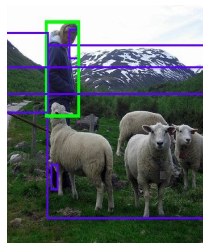
$y = \text{Person}$

Regression Task- Object Bounding Box

Ridge Regression

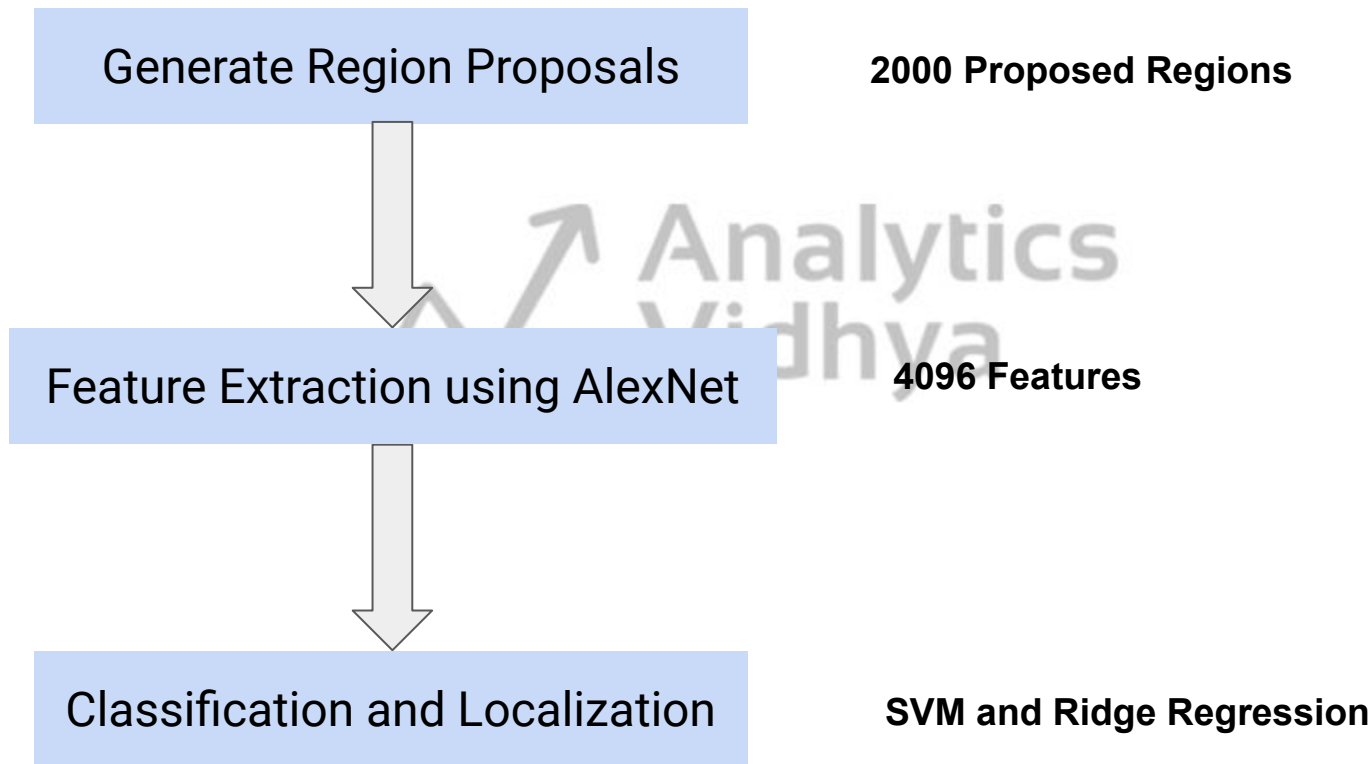


$x_1 \quad x_2 \quad x_3 \quad \dots \quad x_{4096}$



$y = y_1, y_2, y_3, y_4$

Region Based Convolutional Neural Network (R-CNN)



Drawbacks of R-CNN

- High Training and Inference time



Drawbacks of R-CNN

- High Training and Inference time
- Generating the feature vector for every image region (2000)



Drawbacks of R-CNN

- High Training and Inference time
- Generating the feature vector for every image region (2000)
- Cannot be implemented in real-time



Thank You