Implementing YOLO v3 in PyTorch

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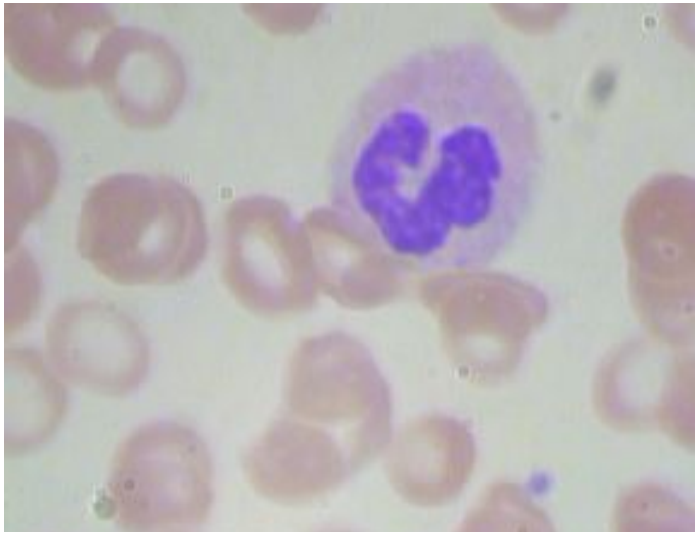
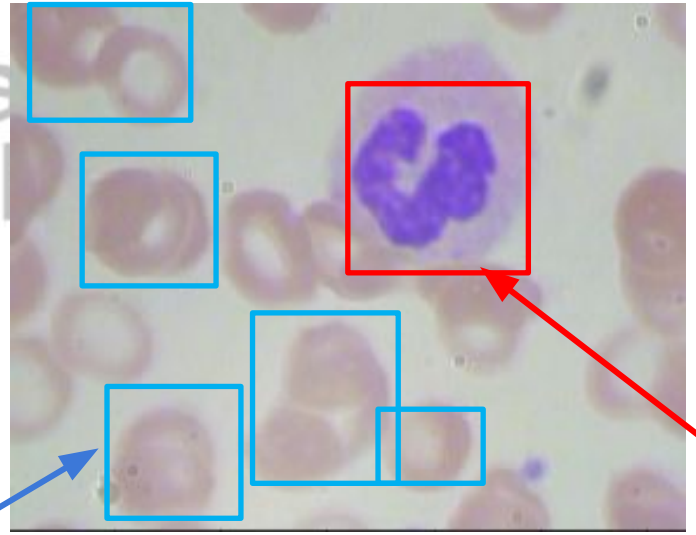
Problem Statement: Detect the RBCs and WBCs in the Images of Blood Cells



Sample Image



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Library used - **ultralytics/yolov3**

Analytics
Vidhya

Implementing YOLO v3 in PyTorch

- Step 1 - Clone repo and install dependencies

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Implementing YOLO v3 in PyTorch

- Step 1 - Clone repo and install dependencies
- Step 2 - Update the architecture file based on the dataset

```
[convolutional]
batch_normalize=1
size=3
stride=1
pad=1
filters=256
activation=leaky

[convolutional]
size=1
stride=1
pad=1
filters=255
activation=linear


[yolo]
mask = 0,1,2
anchors = 10,13,  16,30,  33,23,  30,61,  62,45,  59,119,  116,90,  156,198,  373,326
classes=80
num=9
jitter=.3
ignore_thresh = .7
truth_thresh = 1
random=1
```

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- Step 1 - Clone repo and install dependencies
- Step 2 - Update the architecture file based on the dataset
- Step 3 - Load and Preprocess Data

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- Step 4 - Arrange Data in required format

Arrange Data in Required Format

- All images stored in a folder “images”
- All targets stored in a folder “labels”

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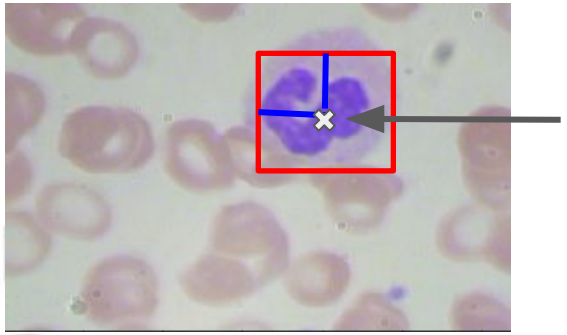
- Every image should have a labels file

```
/images/train2017/000000109622.jpg  # image
/labels/train2017/000000109622.txt  # label
```

Arrange Data in Required Format

- All images stored in a folder “images”
- All targets stored in a folder “labels”
- Every image should have a labels file
- Bounding Box Coordinates : x-centre, y-centre, height and width



Arrange Data in Required Format

- All images stored in a folder “images”
- All targets stored in a folder “labels”
- Every image should have a labels file
- Bounding Box Coordinates : x-centre, y-centre, height and width
- Box coordinates must be in normalized xywh format (from 0 - 1)

$$\frac{\text{x-centre}}{\text{img\_width}} \quad \frac{\text{box\_width}}{\text{img\_width}} \quad \frac{\text{y-centre}}{\text{img\_height}} \quad \frac{\text{box\_height}}{\text{img\_height}}$$

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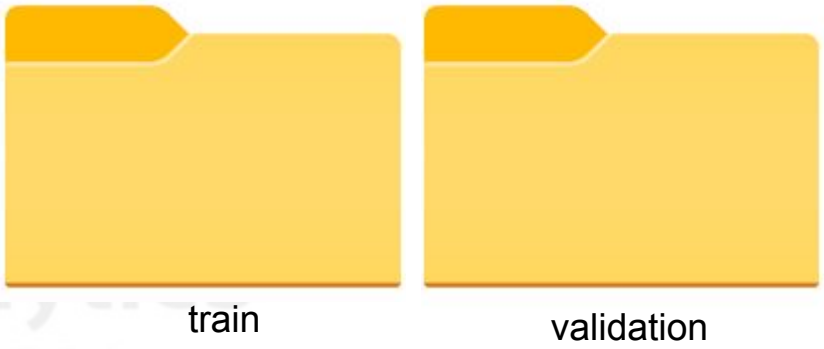
- Separate folders for train and validation



Arrange Data in Required Format

- All images stored in a folder “images”
- All targets stored in a folder “labels”
- Every image should have a labels file
- Bounding Box Coordinates - x-centre, y-centre, height and width
- Box coordinates must be in normalized xywh format (from 0 - 1)
- Separate folders for train and validation
- “Data file” containing class names, path

```
classes=2
train=/content/yolov3/bloodCellDet_train.txt
valid=/content/yolov3/bloodCellDet_val.txt
names=/content/yolov3/bloodCellDet.names
```

Implementing YOLO v3 in PyTorch

- Step 1 - Clone repo and install dependencies
- Step 2 - Update the architecture file based on the dataset
- Step 3 - Load and Preprocess Data
- Step 4 - Arrange Data in required format
- Step 5 - Train the model

Thank You

Analytics Vidhya