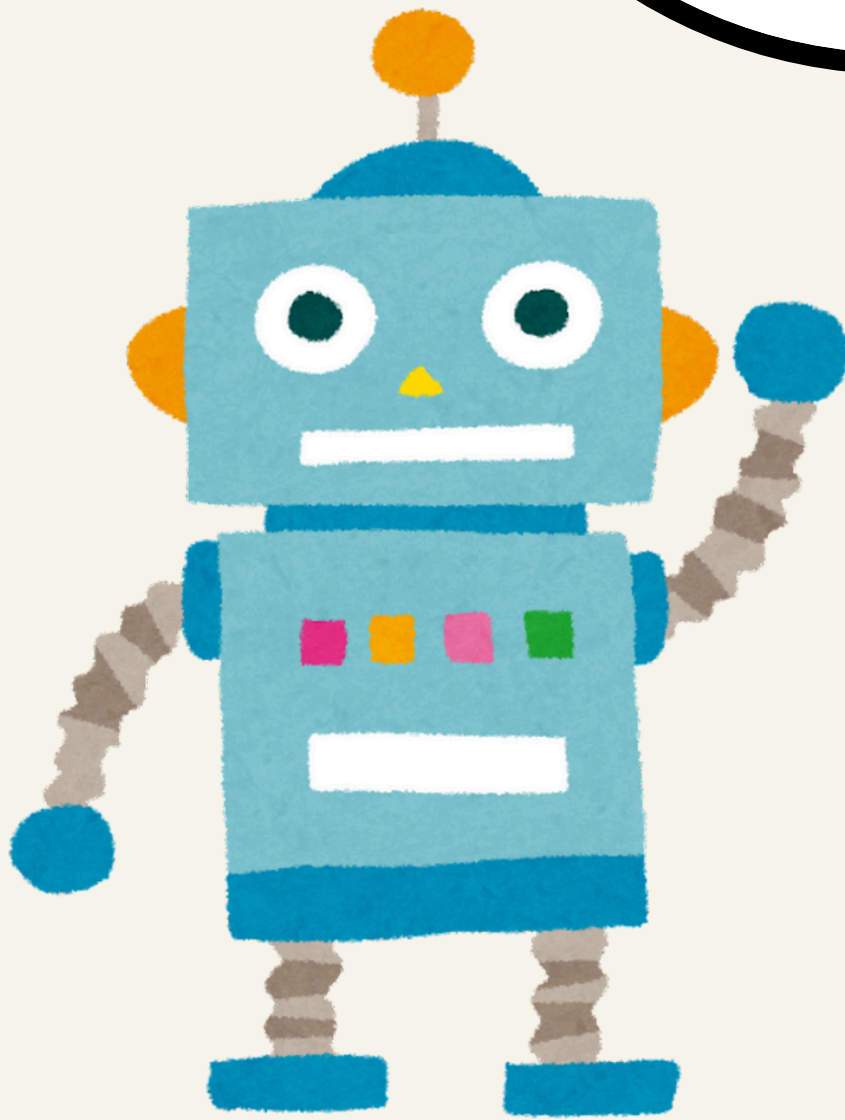
The background features three vertical stripes on the left: a wide pink stripe, a medium blue stripe, and a narrow light beige stripe. The rest of the background is a light beige color with a pattern of small, faint pink dots arranged in a grid-like fashion, with some dots missing to create a sparse effect.

# YOLO

(You Only Look Once)

**Presented By : Thanh Dang**

# TRANSFER LEARNING



# TRAIN BASELINE

```
!python yolov5/train.py --data yolov5/voc2012.yaml --epochs 100 --weights '' --cfg yolov5s.yaml
```

- Result train:

GPU_mem	box_loss	obj_loss	cls_loss	Instances	Size
5.67G	0.0366	0.03889	0.03325	18	640: 1
Class	Images	Instances	P	R	mAP50
all	3425	7416	0.254	0.31	0.204

- Result validation:

Class	Images	Instances	P	R	mAP50
all	3425	7416	0.28	0.315	0.226

Speed: 0.1ms pre-process, 1.5ms inference, 1.0ms NMS per image at shape (32, 3, 640, 640)

# TRAIN WITH PRETRAINED

```
!python yolov5/train.py --data yolov5/voc2012.yaml --epochs 100
```

- 100 epochs completed in 4.660 hours.
- Result train:

Epoch	GPU_mem	box_loss	obj_loss	cls_loss	Instances	Size	
99/99	5.67G	0.03142	0.03591	0.02038	18	640: 1	
	Class	Images	Instances	P	R	mAP50	
	all	3425	7416	0.425	0.557	0.403	0.217

- Result validation:

Class	Images	Instances	P	R	mAP50	
all	3425	7416	0.406	0.483	0.366	0.182

Speed: 0.1ms pre-process, 2.1ms inference, 2.7ms NMS per image at shape (32, 3, 640, 640)  
Results saved to yolov5/runs/val/exp2

# FREEZE ALL LAYER

```
!python yolov5/train.py --freeze 24 --data yolov5/voc2012.yaml --epochs 50
```

```
!python yolov5/train.py --data yolov5/voc2012.yaml --epochs 50 --weights yolov5/runs/train/exp9/weights/best.pt
```

- Result train:

GPU_mem	box_loss	obj_loss	cls_loss	Instances	Size	
5.67G	0.03394	0.0372	0.02281	11	640: 1	
Class	Images	Instances	P	R	mAP50	
all	3425	7416	0.406	0.511	0.377	0.197

- Result validation:

Class	Images	Instances	P	R	mAP50	
all	3425	7416	0.43	0.54	0.425	0.226

Speed: 0.1ms pre-process, 1.8ms inference, 1.3ms NMS per image at shape (32, 3, 640, 640)

# FREEZE BACKBONE

```
!python yolov5/train.py --freeze 10 --data yolov5/voc2012.yaml --epochs 50
```

```
!python yolov5/train.py --data yolov5/voc2012.yaml --epochs 50 --weights yolov5/runs/train/exp12/weights/best.pt
```

- Result train:

GPU_mem	box_loss	obj_loss	cls_loss	Instances	Size	
5.67G	0.03219	0.03657	0.02198	23	640: 1	
Class	Images	Instances	P	R	mAP50	
all	3425	7416	0.418	0.556	0.397	0.214

- Result validation:

Class	Images	Instances	P	R	mAP50	
all	3425	7416	0.426	0.549	0.403	0.218

Speed: 0.1ms pre-process, 1.3ms inference, 0.3ms NMS per image at shape (32, 3, 640, 640)

# SUMMARY

Model	Precision	Recall	mAP50
Baseline	0.28	0.315	0.226
Pretrain yolov5s	0.406	0.483	0.366
Freeze all layer	0.43	0.54	0.425
Freeze backbone	0.426	0.549	0.403

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**THANK YOU**

**Presented By : Adeline Palmerston**