YOLOv8 vs YOLOv9

(Compare performance between YOLOv8 and YOLOv9)

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1. **Approach:**
   Training YOLOv8m and YOLOv9 (Gelan-c model) (20 epochs) with 'football-players-detection-1' dataset and then compare (image size = 640, batch size = 16). All training was done in a Google Colab environment with nVidia Tesla T4 GPUs.

2. **Comparision summary:**
   - Structure and configuration: YOLOv8m, Gelan-c

	YOLOv8m	**Gelan-c**
Layer	295	467
Parameter (M)	25.85	25.47
GFLOPs	79.1	102.5
Training time 20 epochs	0.211 hours	0.277 hours
P	0.912	0.934
R	0.73	0.736
mAP50	0.791	0.815
mAP50:95	0.545	0.876
Inference time on validate set	38.0 ms	49.6 ms

3. **Conclusion:**

- Regarding the YOLOv8 and YOLOv9 model architecture and training time, it is easy to see that the YOLOv8 model has less depth and GFLOPs than YOLOv9. Although the number of parameters is equivalent, the training time for YOLOv8 is relatively much less than YOLOv9.

- Regarding accuracy, we see that both have Precision and Recall close to each other, mAP50:95, YOLOv9 is better than YOLOv8 => YOLO 9's accuracy is better than YOLOv8

- Inference time on the Val set of YOLOv8 is faster than YOLOv9 (easily seen due to the depth of the model and GLOPs) but in return the accuracy of YOLOv9 is better

Github: https://github.com/nguyenquangtung/Compare-YOLOv9-and-YOLOv8