YOLO26n vs YOLO11s – Benchmark Comparison Report

Environment
GPU: Tesla P100-PCIE-16GB
CPU: 2 cores (4 logical)
Python: 3.12.12
OS: Linux (6.6.113+)

Model Size

YOLO26n: ~5 MB
YOLO11s: ~18 MB

YOLO11s is approximately three times larger, reflecting its increased parameter count and computational capacity. YOLO26n maintains a lightweight architecture with significantly fewer parameters (2.5M vs 9.4M), making it more efficient in resource-constrained scenarios.

Training Time & Convergence

YOLO26n:

- Epochs: 150

YOLO11s:

- Epochs: 161

Observation: Both models required similar training durations in terms of epochs. YOLO11s trained slightly longer but demonstrated stronger convergence in final detection metrics.

Core Metrics (Focus: mAP@50, Precision, Recall)

YOLO26n:

- mAP@50: 0.8799
- Precision: 0.8441
- Recall: 0.7856

YOLO11s:

- mAP@50: 0.9252
- Precision: 0.8825
- Recall: 0.8577

Inference Performance

YOLO26n:

- Inference Speed: 3.17 ms
- Parameters: 2.5M

YOLO11s:

- Inference Speed: 5.89 ms
- Parameters: 9.4M

YOLO26n is noticeably faster in raw inference time and significantly lighter in computational cost. YOLO11s, while slower, provides stronger detection accuracy.

Key Takeaways

1. YOLO11s achieved higher mAP@50, precision, and recall across all core detection metrics.
2. YOLO26n is significantly lighter (2.5M vs 9.4M parameters) and computationally more efficient.
3. YOLO26n is faster in inference (3.17 ms vs 5.89 ms), making it attractive for real-time or edge scenarios.
4. YOLO11s delivers stronger overall detection quality at a higher computational cost.

5. YOLO26n offers an impressive efficiency-to-performance ratio given its size and speed profile.

Video Inference Observations

Under the same confidence threshold, YOLO26n tends to output detections with slightly higher confidence scores. However, both models perform reliable object detection in practical scenarios.

From a general-purpose perspective, YOLO11s appears to be the stronger model in terms of overall detection quality. That said, YOLO26n should not be considered a poor-performing model; it delivers strong results relative to its lightweight architecture and speed advantages.

Conclusion

YOLO11s provides superior detection performance and may be the preferred choice when accuracy is the primary objective.

YOLO26n, however, stands out as a highly efficient model, offering faster inference and lower computational demand while still maintaining strong detection capability.

The choice between the two ultimately depends on deployment constraints and performance priorities.