Lenovo Promotes AI Implementation with Best-In-Class Performance with the Latest MLPerf Results
Article

In the ever-evolving landscape of artificial intelligence and machine learning, performance benchmarks are the guiding stars that help organizations make informed decisions about their hardware and software configurations. In this article, we're sharing the impressive results of the MLPerf benchmark results on our servers.

The Lenovo ThinkSystem SR675 V3 powered by the NVIDIA H100 PCI GPU and AMD Genoa Processors, and the Lenovo ThinkEdge SE450 with NVIDIA L40 GPU and Intel Xeon Processors, have emerged across various MLPerf categories, demonstrating unparalleled performance and efficiency.

In this article, we summarize these MLPerf benchmark results.

MLPerf results on the SR675 V3

The outstanding MLPerf results are as follows:

- **Object Detection with RetinaNet Server**

  MLPerf RetinaNet: 8801.85

  Object detection is a critical task in computer vision, with applications ranging from autonomous vehicles to security systems. The ThinkSystem SR675 V3, excelled in object detection using the RetinaNet model with an outcome of 8801.85. RetinaNet is renowned for its accuracy and efficiency, and the SR675 V3 proved to be the perfect companion. It delivered remarkable performance, showcasing our commitment to pushing the boundaries of what's possible in computer vision.

- **Speech Recognition with RNN-T Server**

  MLPerf RNN-T: 129,622

  In the realm of speech recognition, the SR675 V3, shone bright with the RNN-T model, achieving 129,622, setting our config at the top of the list. Recurrent Neural Network Transducer (RNN-T) is a powerful architecture for converting spoken language into text. The SR675 V3's ability to handle this complex task with exceptional accuracy is a testament to its robust capabilities in the field of natural language processing.

- **Language Processing with BERT 99 Offline**

  MLPerf BERT 99.0 Offline: 46,720.20

  When it comes to natural language understanding and processing, few models match the prowess of BERT. The ThinkSystem SR675 V3 achieved a BERT 99.0 offline score of 46,720.20, demonstrating its superior language processing capabilities. This achievement showcases Lenovo's commitment to excellence in understanding and working with natural language.

MLPerf results on the SE450

The Lenovo server lineup also includes the Lenovo ThinkEdge SE450, which also showcased its prowess winning across multiple MLPerf tests, including:

1. Resnet50 SingleStream: 0.76
2. Resnet50 MultiStream: 1.02
3. Resnet50 Offline: 52,623.40
4. RetinaNet SingleStream: 37
5. RetinaNet MultiStream: 10.9
6. RetinaNet Offline: 1,050.76
7. 3D-Unet 99.0 SingleStream: 611.7
8. 3D-Unet 99.0 Offline: 6.67
9. 3D-Unet 99.9 SingleStream: 608.66
10. 3D-Unet 99.9 Offline: 6.69
11. BERT 99.0 SingleStream: 1.99
12. BERT 99.0 Offline: 3,924.65

The ThinkEdge SE450 server's stellar performance in these diverse tests showcases its versatility and capability to excel in various ML workloads at the edge. Whether it's image recognition, object detection, or complex language processing, the SE450 consistently delivered impressive results.

Conclusion

In the world of machine learning and artificial intelligence, performance matters. Lenovo servers such as the ThinkSystem SR675 V3 and the ThinkEdge SE450 have not only met but exceeded the expectations set by the MLPerf benchmarks. Their outstanding performance in object detection, speech recognition, language processing, and a wide range of other tests underscores Lenovo's commitment to delivering cutting-edge solutions.

If you're looking for servers that can handle the most demanding AI and ML workloads with ease, look no further. Lenovo servers have proven themselves as top contenders in the MLPerf arena, providing the power and efficiency needed to tackle the challenges of today's AI-driven world.

For more information, see these resources:

- Lenovo AI home page:
  https://lenvo.com/ai
- Reference Architecture for Generative AI Based on Large Language Models (LLMs)
  https://lenovopress.lenovo.com/lp1798-reference-architecture-for-generative-ai-based-on-large-language-models

Related product families

Product families related to this document are the following:

- MLPerf Benchmark
- ThinkEdge SE450 Edge Server
- ThinkSystem SR675 V3 Server

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