SZTAKI, the Institute for Computer Science and Control, Enhances Research Abilities with High-Performance Supermicro GPU Systems

Supermicro AMD-Based Systems Give Researchers New System for Enhanced Algorithms

INDUSTRY

Academic Research

CHALLENGES

- Use the latest GPUs available
- Allow for more research
- Reduce time for algorithms to run

SOLUTION

Supermicro A+ Servers with 2nd Gen AMD EPYC™ Processors

Introduction

Based in Budapest, Hungary, the Institute for Computer Science and Control (SZTAKI) is a premier research organization that focuses on a range of research domains, including computer science, engineering, information technology, and intelligent systems. SZTAKI works with commercial and government partners to conduct research that is innovative and technologically advanced. SZTAKI coordinates the Artificial Intelligence National Laboratory of Hungary, a research consortium of the major academic institutions in AI. SZTAKI requires the most advanced computing platforms available to accomplish these goals and recently acquired Supermicro A+ 4124GO-NART servers.

Challenges

SZTAKI scientists and engineers focus their research areas that require advanced GPU capabilities. These projects include:

- Medical image processing, specifically, cardiac MRI and chest CT for research on long COVID symptoms tumor detection, dental CT segmentation for implant design automation.
- Machine perception for autonomous vehicles and robotics
- Language modeling, e.g., training a Hungarian language BERT model for applications such as chatbots.

The algorithms that the researchers were using demanded a scalable computing environment, not just for the CPUs but also for the GPUs. Additionally, some of the algorithms required more complex tasks to complete in a reasonable amount of time. A system that supported the latest and fastest peer-to-peer GPU connectivity from NVIDIA

was critical for researchers trying to solve complex problems in a reasonable amount of time.

Solution

The team at SZTAKI investigated several servers from various system manufacturers and settled on acquiring Supermicro A+ 4124GO-NART GPU servers. This system contains two AMD CPUs and eight NVIDIA® HGX A100 GPUs. The system also includes one TB of DRAM. Using multiple GPUs connected with NVIDIA® NVLink® and NVIDIA® NVSwitch™, the GPUs can communicate at up to 600 GB/s Bi-directional Bandwidth. The AMD CPUs, operating at 3.2 GHz, run the applications, interacting with the GPU sub-system as needed. The NVIDIA HGX A100 8-GPU 40GB contains the latest Tensor Core GPUs, enabling applications to run faster and return results to the researchers faster than ever before.

BENEFITS

- Faster application performance
- Wider range of research areas to investigate

PRODUCTS

- Supermicro A+ GPU Server

"We are very pleased with the performance of our new A+ server from Supermicro. Our researchers are now able to advance our use of AI and focus on more advanced research. The combination of AMD CPUs with NVIDIA GPUs is working extremely well and helping solve a wide range of challenges."

Andras Benczur, scientific director, Artificial Intelligence National Laboratory Hungary, SZTAKI

A+ 4124GO-NRT Specification

- 2 x 2nd Gen AMD EPYC™ CPUs 7F72 3.2 GHz
- 1 TB RAM
- GPU-NVTHGX-A100-SXM4-8

Benefits

The teams at SZTAKI have increased their pace of research due to the new Supermicro system. This system allows the developers, students, and researchers to implement new algorithms to make discoveries quickly. Compared to their previous generation of servers, algorithms run approximately 20X faster on a number of tasks.

Summary

SZTAKI is currently implementing its advanced algorithms on the Supermicro A+ 4124GO-NART GPU server. By reducing the time it takes to complete AI training, researchers can more quickly make decisions and produce better and more accurate outcomes.

Additional Resources:

SZTAKI - https://www.sztaki.hu/en

SUPERMICRO

Supermicro is a global leader in high performance, green computing server technology and innovation. We provide our global customers with application-optimized servers and workstations customized with blade, storage, and GPU solutions. Our products offer proven reliability, superior design, and one of the industry's broadest array of product configurations, to fit all computational need.

For more information, visit https://www.supermicro.com

Artificial Intelligence National Laboratory Hungary – https://milab.hu/

Supermicro A+ Servers – https://www.supermicro.com/en/products/GPU