ISC 2024

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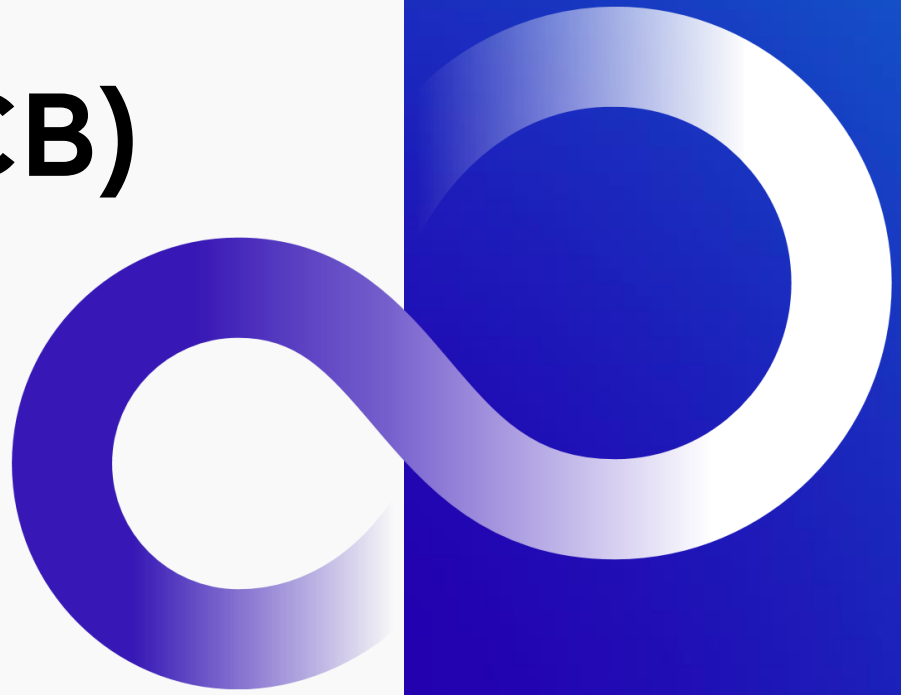
AI Computing Broker (ACB)



Computing Laboratory

Fujitsu Ltd.

AI Computing Broker (ACB)

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Significantly Reducing AI Calculation Costs and Winning the AI Development Race

AI race heating up → Global GPU shortage → Price surge & Long lead time

AI power ≒ GPU count

Technology to achieve fast AI with fewer GPUs

Watch the demo !

Technical Points of ACB

- Applicable to a wide range of AI using PyTorch or TensorFlow
- End users can utilize the ACB software by installing it
- Supports from on-premises to cloud environments

Technical Overview

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Realize more efficient use of GPU in AI learning process

Challenges in using GPU

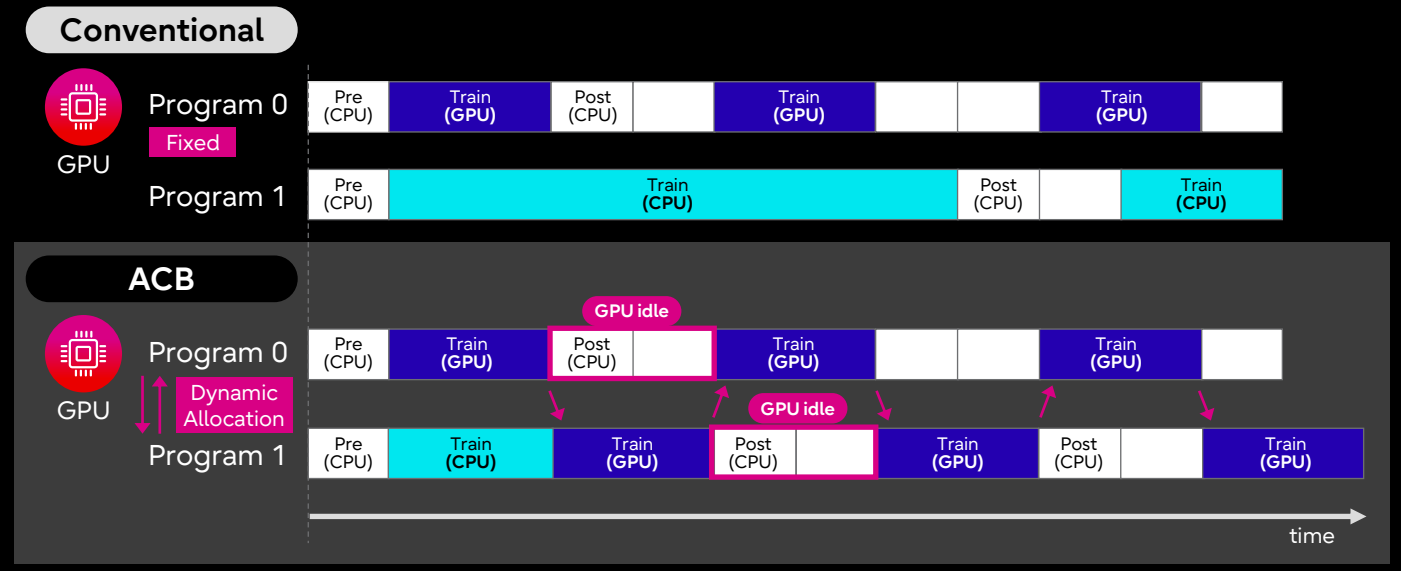
- Since the GPU is allocated on a per-program basis, even if the GPU idle time is large, other programs cannot use the GPU until the program ends.
- When virtualizing the GPU to share it among multiple programs, the GPU memory is divided for each program, reducing the capacity per program.

Features of AI Computing Broker

- GPU scheduling specialized for deep learning
- Control of GPU allocation at the processing unit level within the program
- Improves GPU utilization rate, reducing overall processing time
- More processes can be executed with the same GPU resources
- Unlike sharing of GPUs through virtualization technology, the program can fully utilize the GPU-equipped memory

Technology of AI Computing Broker

Analyze AI processing content, dynamically allocate GPU to processes that require GPU



Conclusion

- We have developed **AI Computing Broker (ACB)** which improves efficiency on HPC systems

- ACB achieves:
  - Adaptive Accelerator allocation
    - Dynamically switches among GPU accelerators and allocates them to processes requiring GPUs
  - Efficient GPU Utilization
    - Less GPUs required for running AI workloads

Thank you