

Global Memory Tech

AI semis expert call takeaways – strong demand on track with lots of chip choices

Industry Overview

What we learned

We hosted a conference call with AI semiconductor expert, George Chrisikos (a former Qualcomm architect), on 11 January. What we learned to run an AI server: 1) so many different semiconductor chips (GPU, CPU, DDR5, HBM, etc) are needed collectively; 2) data training is based on very powerful GPU+HBM versus relatively lower specs of inference; 3) CPU and GPU architectures are getting merged, while new CPU+LPDDR5 more effectively support GPU+HBM; 4) there are lots of choices among GPU, TPU, GDDR6, LPDDR5, HBM2e, HBM3, HBM3e, etc; 5) LLM parameters are exponentially growing (even trillion parameters already available); 6) semis backend fabrication has well expanded (CoWoS, TSV, MR-MUF); 7) HBM4 with hybrid bonding is coming but is still uncertain for 2025 introduction; and 8) Samsung's efforts to catch up with Hynix are notable.

We will host another expert call to discuss “on-device AI” with Alexander Ermolaev (former head of NVIDIA AI developer relations) on 12 January 2024 at 9:00AM HKT.

Implications to memory and hardware tech

We conclude from this expert call the potential for broadly positive implications for semis memory (strong demand for not only HBM but also GDDR6/LPDDR5 through 2024-25) and hardware tech (exponentially growing AI server for both training/inference).

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AI: Artificial intelligence

CoWoS: Chip-on-wafer-on-substrate

CPU: Central processing unit

DDR5: 5th gen double-data rate DRAM

DRAM: Dynamic random-access memory

GDDR6: 6th gen of graphics double-data rate DRAM

GPU: Graphics processing unit

HBM: High bandwidth memory

HBM2e/3/3e/4: 3rd/4th/5th/6th gen HBM

LLM: Large language model

LPDDR5: Low-power DDR5

MR-MUF: Mass reflow molded underfill

TPU: Tensor processing unit

TSV: Through-silicon via

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