**Global Research Outreach\_2025\_Call for Proposal**

**Theme: System Architecture**

**- Sub-Theme: Chiplet-Based Designs for Next Generation AI**

The rapid advancement of AI has led to the development of increasingly complex models, including mixture-of-experts, multi-modal AI, and agentic AI. These emerging AI models require significant computational resources and data processing capabilities. To support these demands, there is a growing need for innovative computing architectures that can provide high performance, efficiency, and scalability. Chiplet-based large-scale systems offer a promising opportunity to achieve this goal.

We are seeking innovative research in chiplet-based architectures, chiplet design, and algorithms that can optimize network communication efficiency or improve overall system performance. Specifically, we are interested in innovative chiplet-based architectures that achieve high scalability while minimizing power consumption; novel chiplet designs that enable high-performance and high-efficient computation and communication; as well as new algorithms (e.g., distributed training/inference algorithms; collective communication algorithms) tailored to the unique characteristics of chiplet-based systems and emerging AI models

The objective of this research project is to investigate several key areas related to chiplet-based large-scale architectures for emerging AI models. We are seeking fundamental research that solves problems arising in these areas. We are interested in receiving proposals that address one or more of the following research areas:

* Multi-chiplet architecture design up to wafer-scale: exploring novel topologies & configurations
* Tiered memory architecture based on chiplet technology: optimizing memory hierarchy & data movement
* Architecture design using custom HBM technology enabling integration of IPs within HBM's logic die: exploring new opportunities for heterogeneous integration & optimized system design
* Active interposer technology: integrating active components into interposer for improved performance & functionality
* Innovative interconnection network architectures for chiplet-based systems with high bandwidth and low latency communication
* In-network processing techniques (e.g., data compression/reduction) that reduce data movement between chiplets
* Distributed training/inference algorithms optimized for chiplet-based systems
* Collective communication algorithms (e.g., all-reduce, all-gather) optimized for chiplet-based systems

※ *The topics are not limited to the above examples and the participants are*

 *encouraged to propose the original idea.*

※ *Funding: Up to USD 150,000 per year*