<Professor Joungho Kim's Lab.>

TeraByte Interconnection and Package Laboratory

■ **Contact information**

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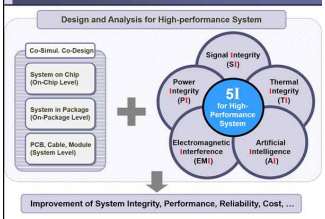
■ **Current state of the Lab. (in 2025 Spring Semester)**

Postdoctoral Fellows : 2 PhD Students: 10 Master's Student: 17

■ **Research Areas**

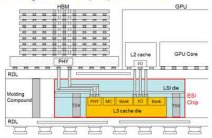
Core Research Field : 5 Is



R&D Application : Next Gen. HBM for AI Supercomputer

◆**Major R&D Area**

- SI & PI design of next gen. High Bandwidth Memory (HBM)
- Near-Memory Computing (NMC) Architecture in HBM (NMC-HBM)
- SI & PI of Silicon interposer for HBM chiplet
- SI of Through Silicon Via (TSV) at stacked die

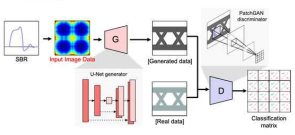


< Overview of L3E-GPU-HBM Architecture >

R&D Application : ML-based SI/PI Design

◆**Major R&D Area**

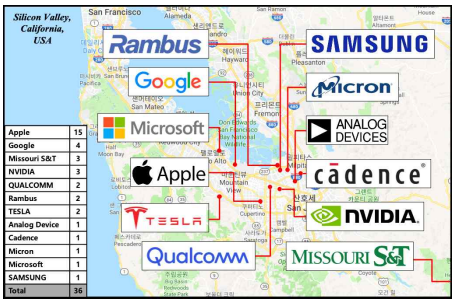
- Machine Learning (ML) based SI/PI design of 2.5D/3D Ics
- GAN-based eye diagram estimation for design of HBM interposer
- Transformer-based architecture for hardware design optimization considering PI



< Overview GAN-based eye diagram estimation >

■ **Recommended courses & Career after graduation**

- Fundamental of electromagnetics and circuit theory.
- Graduates are currently in various global companies: Samsung Electronics, SK Hynix, Apple, Google, Nvidia, Intel, Tesla, Rambus, and etc.



■ **Introduction to other activities besides research**

We encourage various extra-activities. We participate in activities such as soccer, e-sports and running. Every summer, we go to the beach for a laboratory workshop. Moreover, we are continuing good relations with graduates through frequent meetings and interactions.

■ **Introduction to the Lab.**

The TERA Lab aims to develop global talent, and many graduates have already entered the world's leading companies. The professor actively leads them to conduct creative research, and there is an atmosphere in which members of the lab can discuss freely. In the field of research, it deals with a lot of future-oriented and practical issues.

■ **Recent research achievements ('24~'25)**

[1] Best Paper Award, Taein Shin and et al, "PSIJ Based Integrated Power Integrity Design for HBM Using Reinforcement Learning: Beyond the Target Impedance", DesignCon, 2025

[2] Best Paper Award, Taesoo Kim and et al, "Design and Analysis of Twin Tower HBM Architecture for Large Memory Capacity and High Bandwidth System", EDAPS (Electrical Design of Advanced Packaging and Systems), 2024