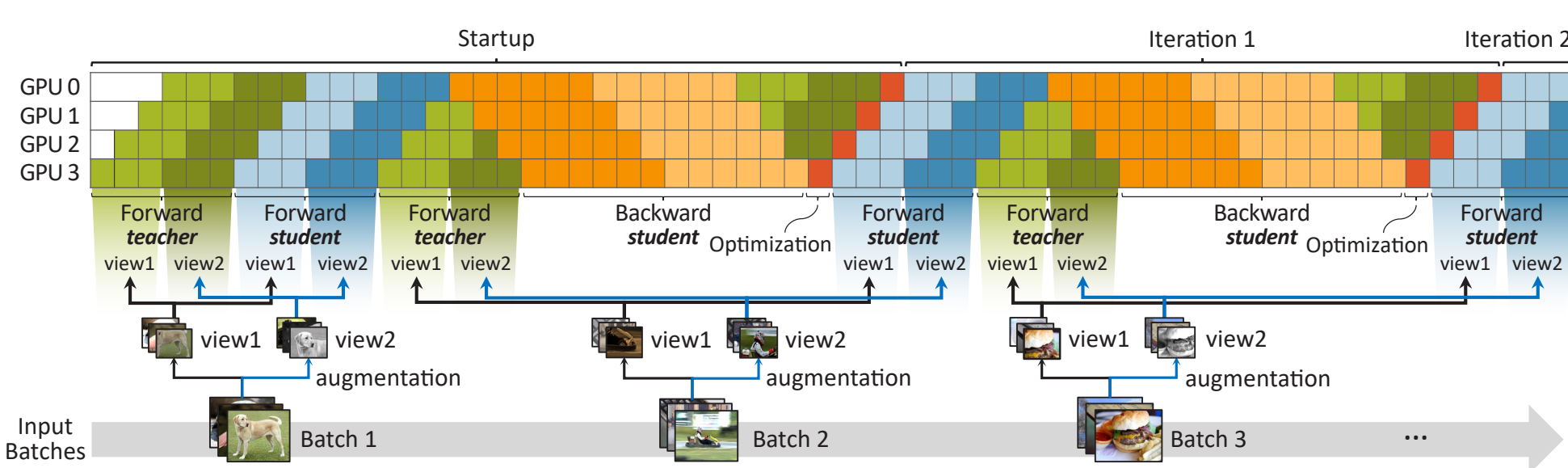


## Our Research

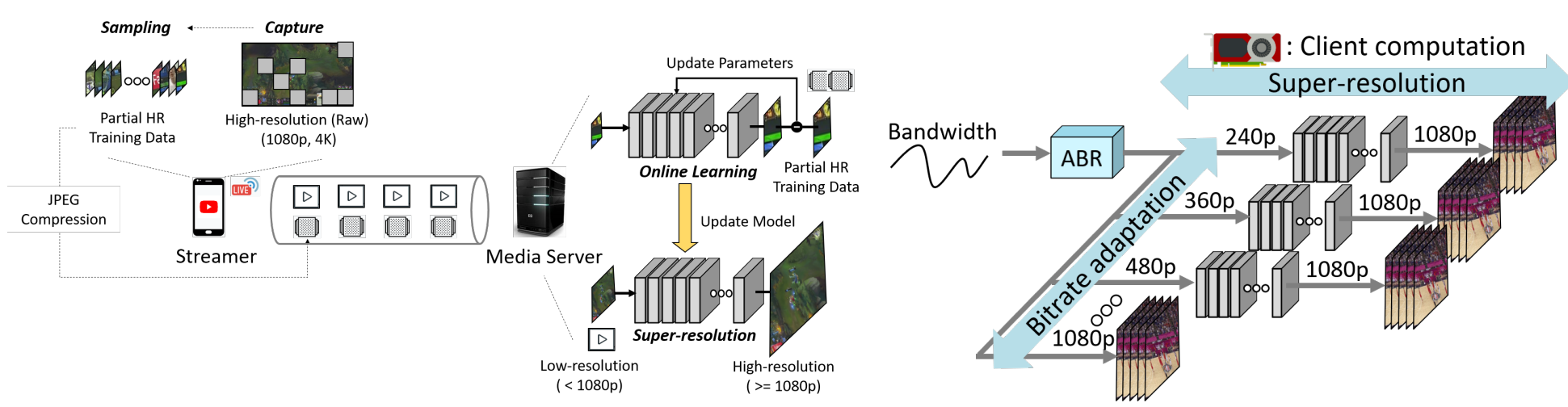
### Systems for AI

- Designing new frameworks for deep neural networks
- Large-scale AI/ML design with high utilization of multiple GPUs
- Maximizing memory efficiency of AI models while remaining statistical efficiency
- Accelerating training for deep neural network [ICML '22]



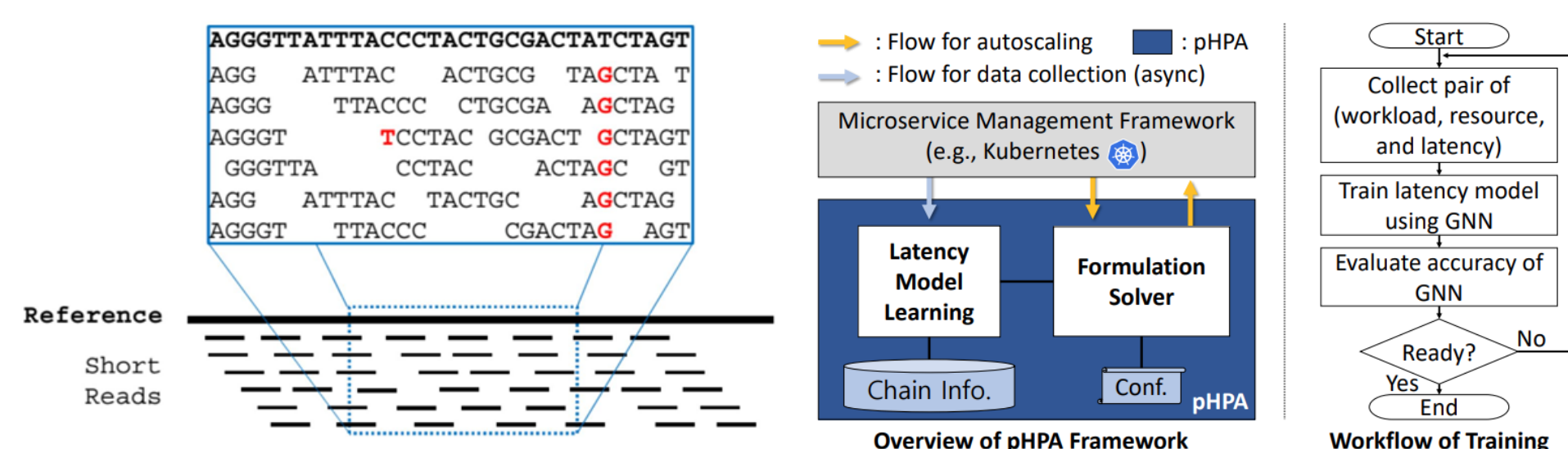
### AI + Video

- HTTP adaptive streaming + neural super-resolution [USENIX OSDI'18] (First paper from KAIST in the history of OSDI)
- Live streaming + neural super-resolution [ACM SIGCOMM '20]
- Mobile + neural super-resolution [ACM MobiCom '20]
- Scalable neural super-resolution [ACM SIGCOMM '22]
- Codec + neural super-resolution [In-progress]



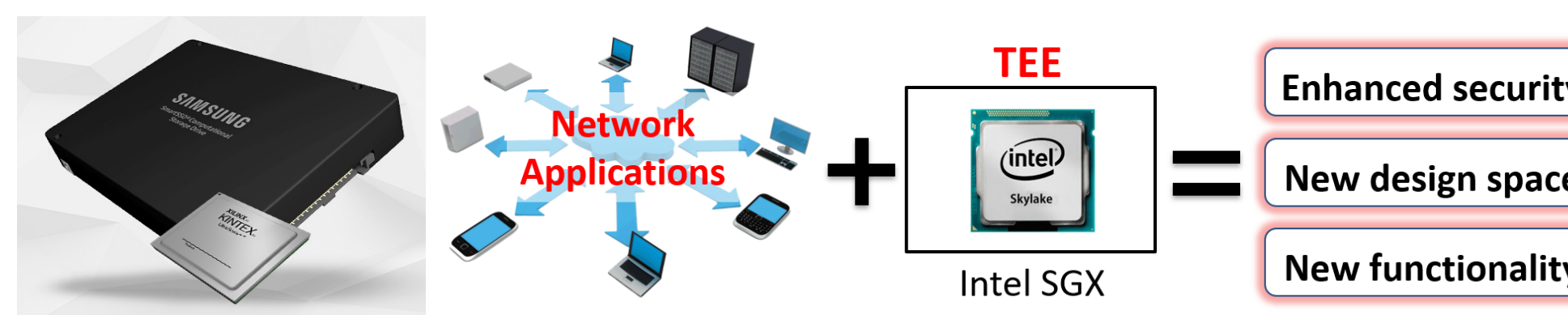
### AI for Systems

- Learned index in short read alignment [Bioinformatics '22]  
Accelerate DNA sequencing by introducing learned index and solving the exact match search problem for efficient seeding
- Microservice auto-scaling [CoNEXT '21]  
Auto-scale microservices for optimal resource utilization while meeting the service level objective (working with Toyota)
- 5G resource scheduling [CoNEXT '22]  
Dynamic resource scheduling to optimize the use of network resource and wireless spectral efficiency under 5G, 6G environments (working with Samsung)



### Cloud Systems

- Offloading computations to Samsung computational SSD (working with Samsung)
- Practical transport protocol for datacenter networks [EuroSys '21]
- TEE-based network system security [IEEE/ACM ToN '20, '22]



## Connectivity

### Alumni

Faculty



MAX PLANCK INSTITUTE  
FOR SOFTWARE SYSTEMS

Industry



Ph.D. Course



MAX PLANCK INSTITUTE  
FOR SOFTWARE SYSTEMS

### Connection to Industry



We have connections with a number of IT companies and academies.  
If you want to connect with them, we will do our best to support you!

## Letter from Professor



### Dear students

I am actively looking for graduate-level students. If you want to apply to KAIST or have applied to KAIST, I can meet with you to talk about our research interests.

I encourage students to talk to many potential advisors (including me :-)) before they select one. If you want to talk to me for any reason regarding your research interest, please email me. If you are a KAIST student, I reply to all of your emails; 100% guaranteed.

**We only need your interest, not talent.**

