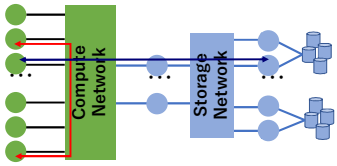
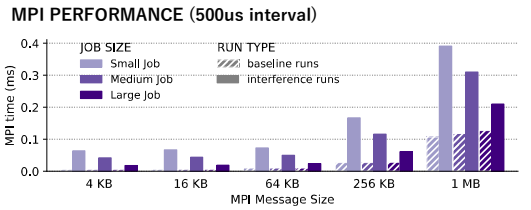
RG1-1: Big Data Open HPC Platform Group

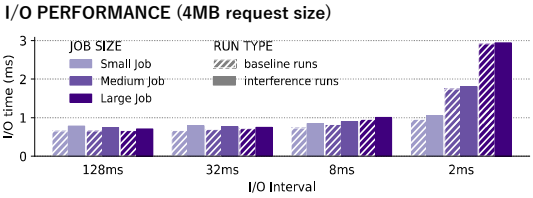
Characterizing MPI vs. I/O Interference



HPC networks are often shared by inter-node traffic and storage traffic. We characterize the interference trends of each type of traffic by comparing **baseline runs** for a single traffic (I/O or MPI) to interference runs with both traffic running simultaneously.

- MPI traffic is more sensitive to interference than I/O traffic
- I/O traffic causes high network congestions that degrades I/O performance as well as MPI performance
- Small I/O jobs experience up to 18% slowdown due to interference when I/O requests are sparse
- Small MPI jobs experience up to 320% slowdown when the message size is small

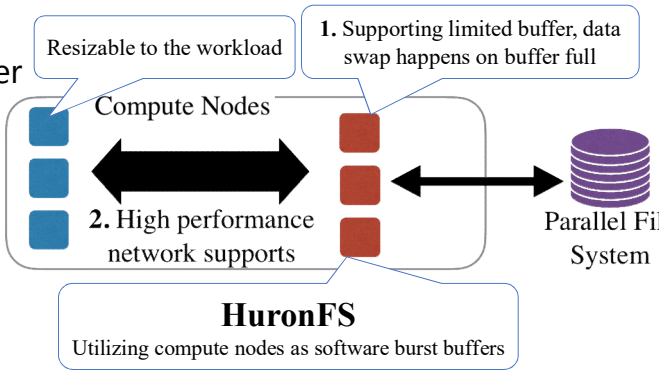




HuronFS : Hierarchical, User-level and On-demand Burst Buffer File System

- Burst buffer systems are designed to alleviate the gap between computation and storage
  - Higher performance but lower capacity
- There are multiple limitations on the static burst buffer
  - Procurement, deployment and maintenance
  - No extension during the jobs
  - No support for data swap -> requires more buffer than estimated size to start a job
  - No adaptation to I/O contention or workload
- **We propose a software, user-level on demand burst buffer system for HPC (HuronFS) to solve these problems**

Open Source Available on github :
https://github.com/EBD-CREST/HuronFS



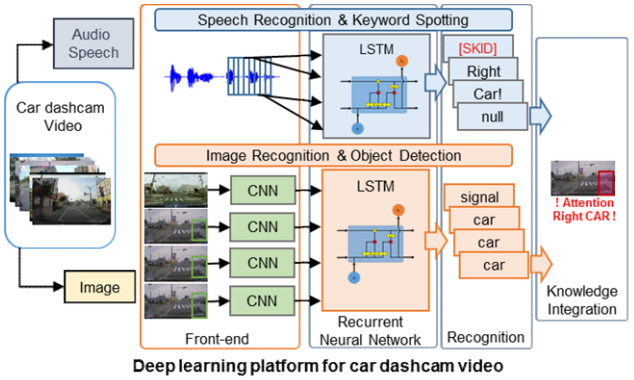
HuronFS extends CloudBB[1] with feature 1 and 2 for better HPC support.

Details at Research Poster Session [RP16]

[1] T. Xu, K. Sato and S. Matsuoka, "CloudBB: Scalable I/O Accelerator for Shared Cloud Storage," *2016 IEEE 22nd International Conference on Parallel and Distributed Systems (ICPADS)*, Wuhan, 2016

RG 2-1: Large-Scale DNN for Real-World Data Group

- Fast and efficient deep learning platform for real-world multi-modal data such as video, audio, and speech
- Build an open platform for real-world applications such as drive-recorder video and surveillance camera
- Utilize images obtained from satellites, airplanes, drones, and mobile devices, for object recognition
- Develop a system to detect not only a specific object, but also its precise location.



Deep learning platform for car dashcam video

Information: https://unit.aist.go.jp/rwbc-oil/index-en.html
Contact: info-rwbc-ml@aist.go.jp