Network-aware Data Management for Disaggregated Memory Systems

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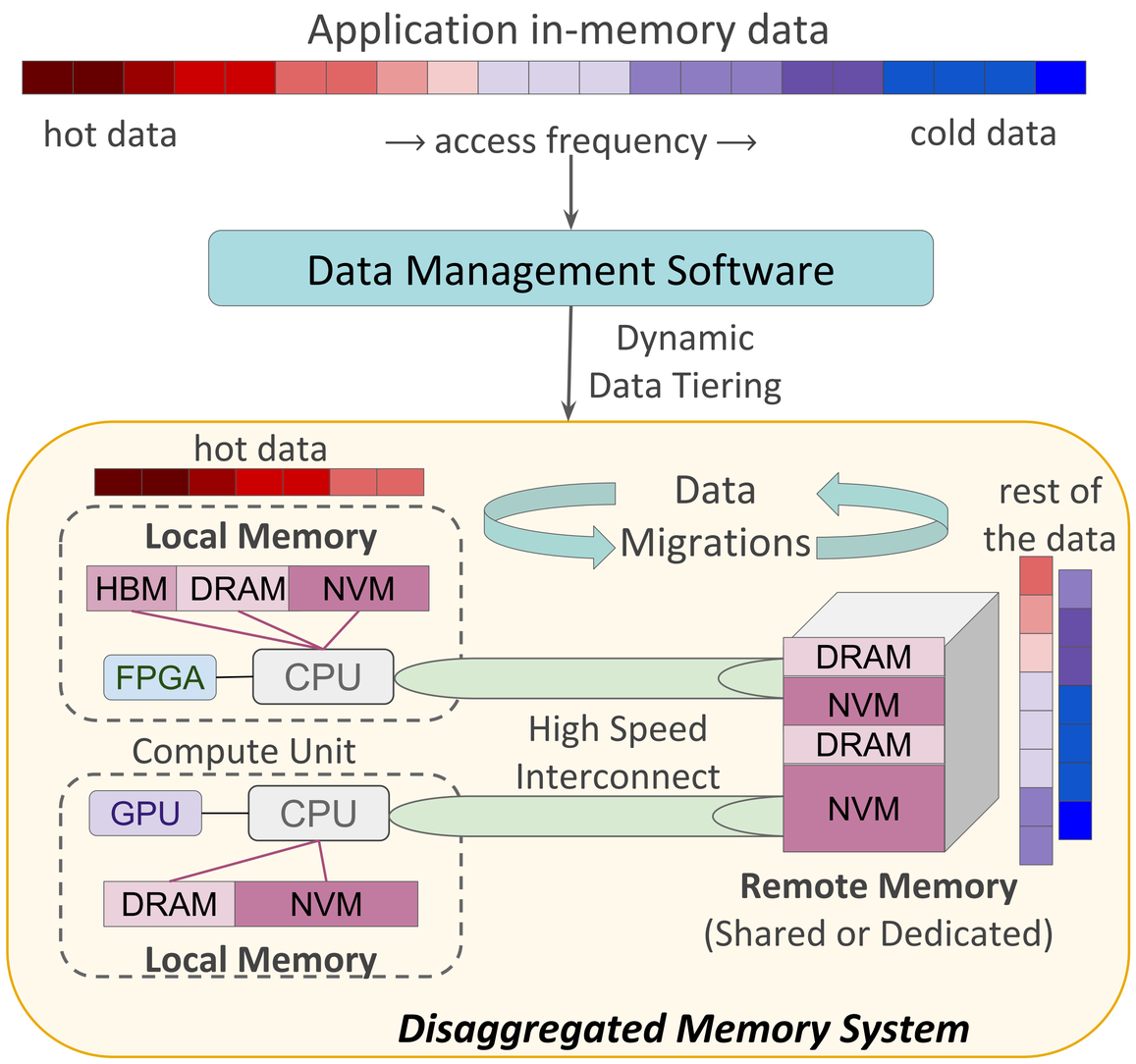
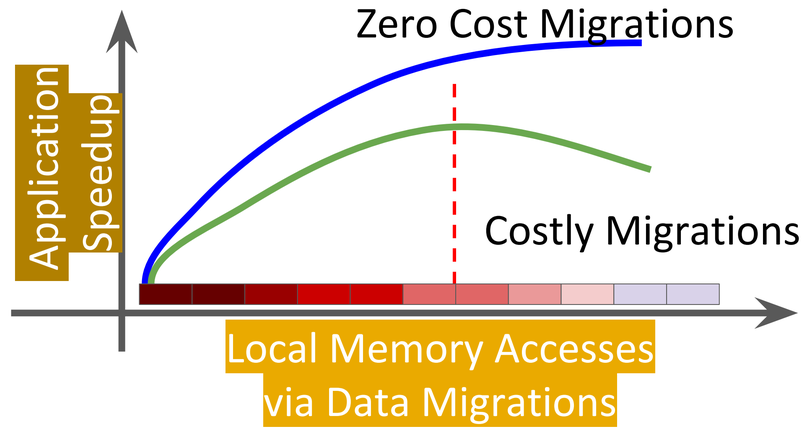
1. Problem Space



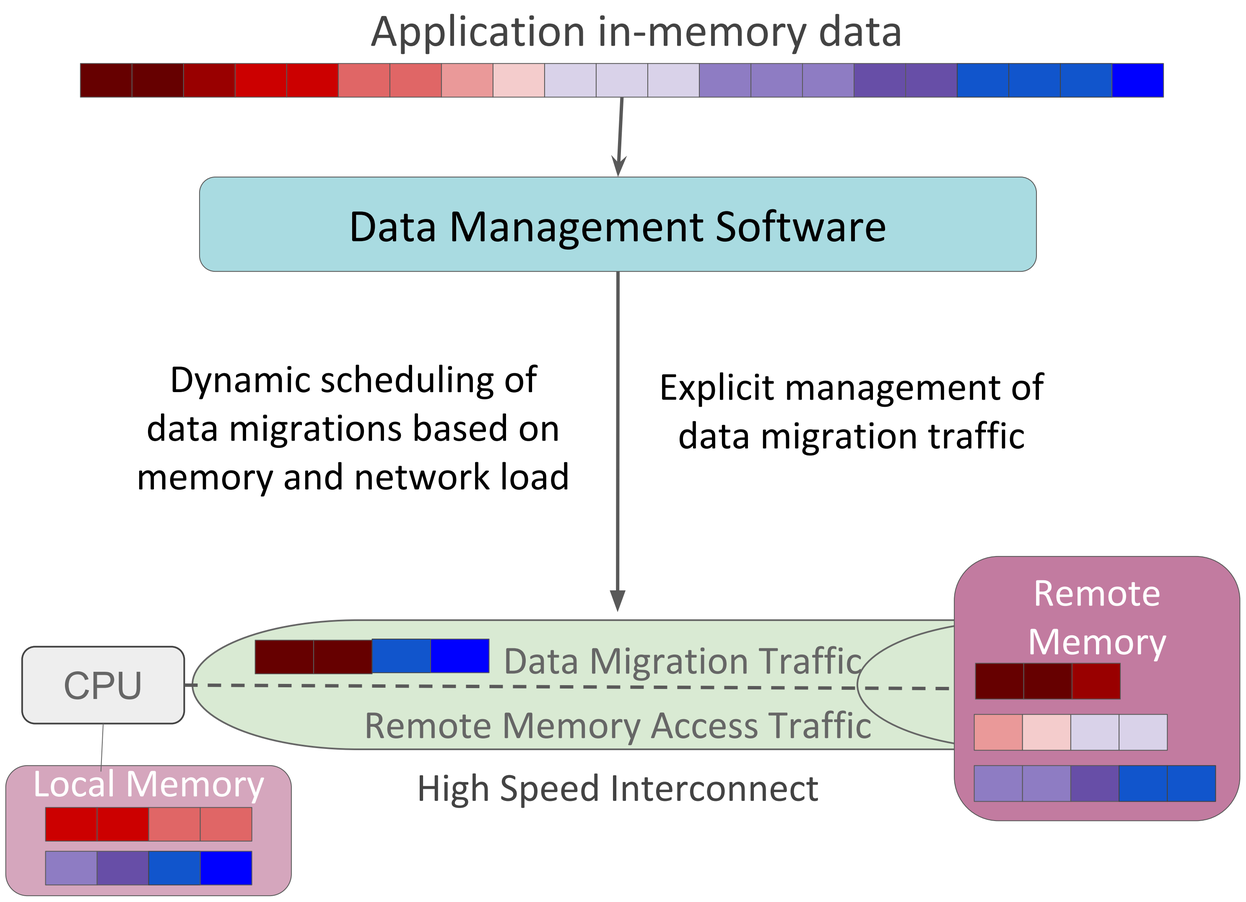
2. Challenges



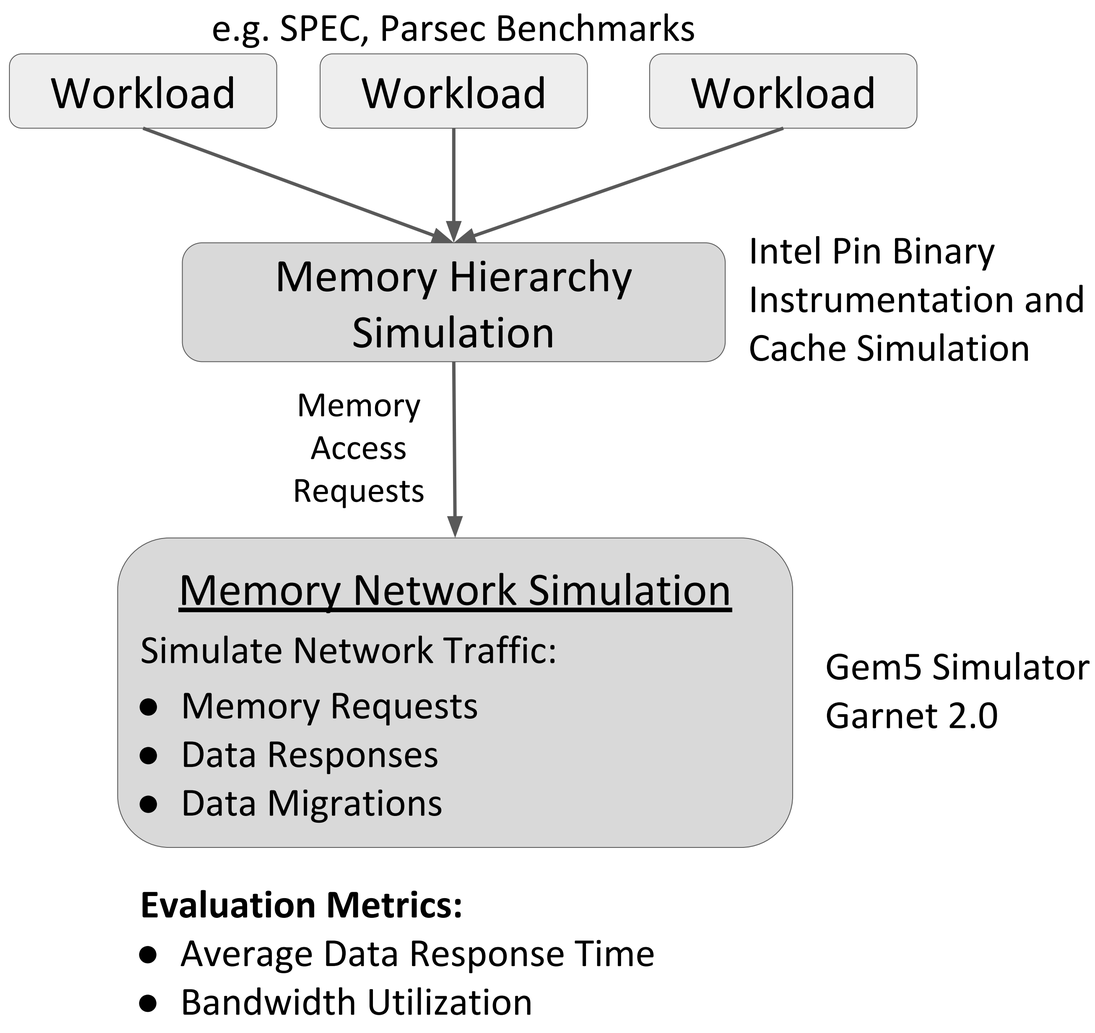
Time to migrate the pages > Time to access them from remote memory.

1. **How to predict which application data to migrate?**
   [Kleio[1] - HPDC '19 - best paper award finalist]
2. **How to predict the performance curve for zero cost migrations?**
   [Mnemo[2] - HPBDC workshop of IPDPS '19]
3. **How to predict the performance curve for costly migrations?**
   [Work In Progress]

3. Solution



4. Implementation



Evaluation Metrics:
- Average Data Response Time
- Bandwidth Utilization

Goal
Optimize Application Performance

Method
Maximize Local Memory Accesses

How
Managed bursts of Data Migrations

[1] Kleio: A Hybrid Memory Page Scheduler with Machine Intelligence. Thaleia Dimitra Doudali, Sergey Blagodurov, Abhinav Vishnu, Sudhanva Gurumurthi, and Ada Gavrilovska. In The 28th International Symposium on High-Performance Parallel and Distributed Computing (HPDC '19)
[2] Mnemo: Boosting Memory Cost Efficiency in Hybrid Memory Systems. Thaleia Dimitra Doudali and Ada Gavrilovska. In the HPBDC '19 workshop of IPDPS '19 on High-Performance Big Data, Deep Learning, and Cloud Computing.