ECE5658: Operating Systems Design – Paper Critique

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이성우

1. Traffic management: a holistic approach to memory placement on NUMA systems, ASPLOS 2013

- This paper is motivated by shorten remote memory latency and load imbalance overhead. So, the author proposes the Carrefour, the techniques that automatic selects optimal technique for each application. It uses replication, interleaving and migration in global and page level. This paper is very interesting, because I thought that only remote access is the problem in NUMA system. However, the congestion on memory controller is more significant problem. I think this paper can be improved with increasing the application. I want to know the situation which includes the other feature that affects the performance such as journaling.

2. Regularities considered harmful: forcing randomness to memory accesses to reduce row buffer conflicts for multi-core, multi-bank systems, ASPLOS 2013

- This paper analyzes the memory organization and row-buffer conflict. They said that the row-buffer conflict eliminates the caching effect and makes more delays and energy consumptions. So, they use memory partitioning as solution. They achieve new notion of a memory container to dedicated multiple banks to a core to maximize memory parallelism and randomize memory allocation algorithm to reduce cases where multiple cores access the same bank. This is good paper which presents the memory organization analysis.