ECE5658: Operating Systems Design – Paper Critique

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이성우

1. Everything you always wanted to know about synchronization but were afraid to ask, SOSP 2013

- This paper shows the analysis of the synchronization, especially in hardware cache-coherence protocols. It presents many observations about synchronization problems in multi core CPU. They said crossing sockets, sharing, locking, etc impacts synchronization a lot. This paper is good to understand synchronization on CPU through many observations from hardware level to software level. I think it could be improved by including non-volatile memory technology such as Optane memory.

2. Read-Log-Update: A Lightweight Synchronization Mechanism for Concurrent Programming, SOSP 2015

- This paper proposes the read-log-update (RLU) model which is an improvement of read-copy-update (RCU) synchronization mechanism. RLU allows concurrency of reads with multiple writers and provides easy programming to solve main problems of RCU. This RCU mechanism can be adopted variant part. It has strong advantage is simple programming methodology. Moreover, some data structure such as citrus search tree and resizable has tables are used to improve many features. It could be improved by consideration on GC because of temporal data write. Temporal writes will be invalid block in SSD and can be overhead in performance.