**Main Contributions:**

In a distributed system, when 2 events happened in the same clock cycle, it’s hard to say which happened first. The paper provided a solution for this kind of problem and has a potential for applying this method on every environment. To solve the problem, they introduced a logical clock, represent as C in the paper. This C will count the as the processor sending messages, and work like an actual clock with no standard time between clock cycles. It’s basically a special clock for each processor in my opinion, and goes with each event implemented it. This additional information can help the program know the running order of the processors in each cycle, so they can finally tell which event comes first. They have some problem with this kind of the clock. The implementation is the first thing, in order to make this work, CPU need to keep checking and store additional information in caches due to the crazy changing frequency this thing has. And with out the clock, the count could go though the roof in some unusual situations, and become unreliable. So, it needs to be synchronized again and again in a short period of time.

**My Thoughts:**

I like the idea they solve the problem, that if one clock won’t work, we give them two. This sounds like a pretty dumb idea, but it actually not that bad, and in fact they proved it totally viable in the process. Having this kind of idea makes the way of group members clear, because everyone has the general idea of what they are doing, and they did a great job at the last. So, I like the straight up idea, and it works fantastic.

However, the straight up idea could cause some straight up problem as they described, it’s not very efficient with the CPU structures, and not very reliable in some special situations. These problems need a lot of resource to fix, like design a brand-new CPU and special caches to support some new instructions for the huge amount of C writing and reading event, or add additional physical timers.

Also, the paper represents the idea in the hardest way by giving no information on the big pictures at the beginning, but start with a small part then enlarge it the whole system. I think if they do it normal way it could be better.

**Positive Point:**

Straight up idea, good result.

**Negative Point:**

The structure is not working that well, if they can put a little information of the big picture, and link it with something we know before, this will be a lot easier to understand.