Operating Systems Design: Critique

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- **Exokernel: An Operating System Architecture for Application-Level Resource Management**

  The kernel scheduler basically assigns a ready thread to a resting core. This is a very basic rule, but it is often not followed in a real kernel environment. Experiments with several benchmarks show that there is actually a performance reduction, and the paper has created a new scheduling profiling tool to address this problem.

  The advantage of this tool is that it also shows scheduling problems that are difficult to find with other tools, with little overhead. On the other hand, there is a limitation that has not yet brought the advantages of other trace tools.

  If this tool can include profiling information from other trace tools, it's more versatile.

- **Lottery Scheduling: Flexible Proportional-Share Resource Management**

  Arachne is a new user-level thread management method that creates very short threads to ensure low latency and high throughput. Arachne works core-aware, with the central core assigning cores to other threads. .

  The advantage of Arachne is that it minimizes cache misses and makes it easy to initialize user threads on different cores. And they run in the background with little performance impact. However, parts related to NUMA machines have not been solved so far.

  As noted at the end of this paper, it would be useful if the algorithm could be used in several other areas, such as multi cluster.