

Summary

Eperf is an open source project designed to be able to infer application energy consumption at varying granularities. It uses linear optimization to build a linear model that predicts the energy consumption of an application given micro-architectural information such as cache misses, TLB misses, and number of stalls. These events can be measured on a per-application or per-thread basis with minimal overhead. To record the counters, we use linux perf which is a performance analyzing tool in linux.

Currently the model achieves a mean error rate of 6% on single socket server, and a mean of 19% on double socket server. The mean error rate between different processors is 42%, therefore highly processor-dependent. For future direction, we can try to make the model to measure more accurately in general, but especially on double socket server. It can also be make so that it is more compatible with different types of processors.