Eperf Report Summary

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In the Eperf report, there is a clear explanation as to why previous power consumption trackers like RAPL and PowerTOP have limitations that either are unable to provide the nanosecond granularity or cannot accurately measure the power consumption in a data center setting. The motivation for the creation of Eperf is well-established.

Then the next big section methodology gives the reader a more detailed understanding of how the model is built. There is a scheme to calculate energy by accessing the RAPL counters and multiplying counters with their units to convert the values to joules. There is also a way to record counter values with Linux perf. These two steps combine together and form the dataset for the model. The researchers train a linear least squares model by a convex optimization so that the relationship between the eight performance events (counters) and the energy consumption is revealed. The train and test errors to the model are provided as well.

The final evaluation section tests the model on two different Intel processors. The differences in the evaluation results are explained.

I think for future work, we can try evaluating the model against different processors of different manufacturers to infer the ability of the model to generalize. We can also try training the model with more performance events and see the effect on the error rate or find other optimization methods to improve the model. Also, the report's "Tool for predicting energy use" section mentions that threading and function level energy analysis still await to be added to the tool. The command line interface can also be made into a user interface which will help improve user experience.