Metric profiler integration in AdaptivePerf

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What is AdaptivePerf

AdaptivePerf

Open-source profiler
Developed at **CERN** for
various architectures

SYCLOPS

EU funded - Open-source platform, and application tools for **AI/data mining acceleration** with **extremely large** and **diverse data.**

RISC-V®

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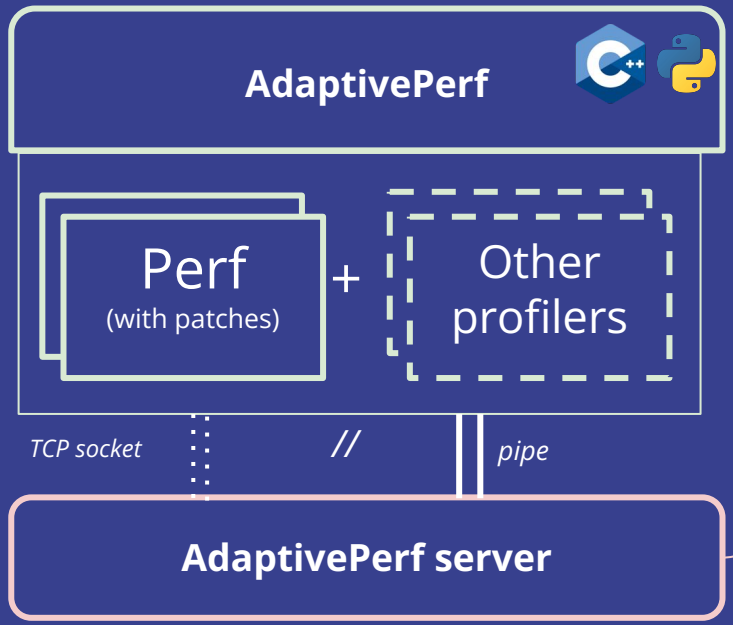
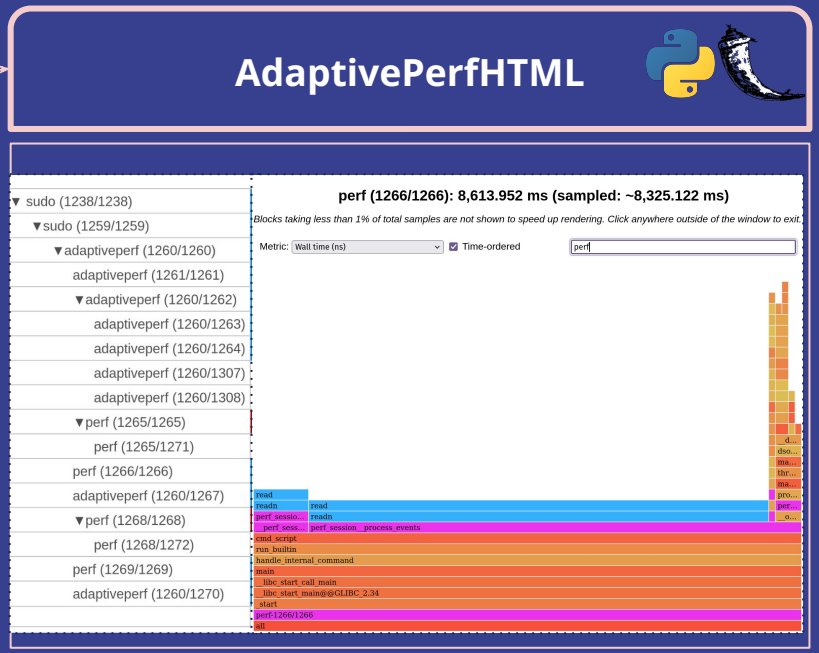
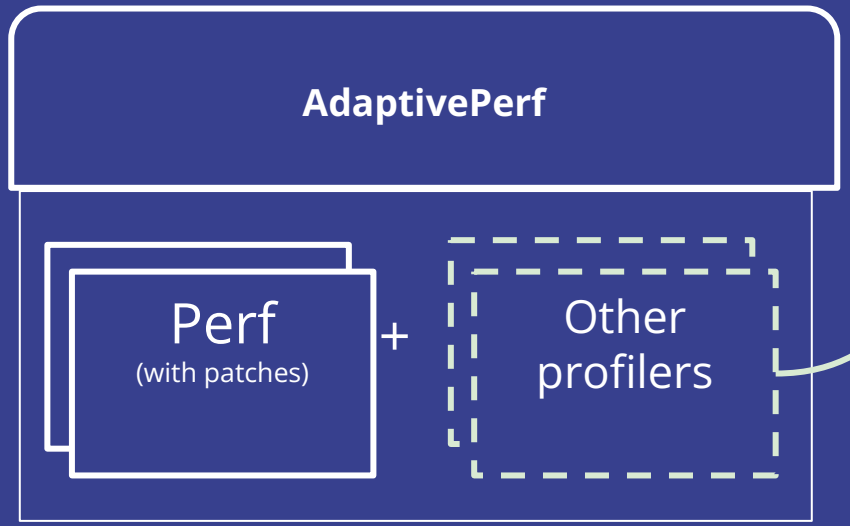
What is AdaptivePerf





Perf: Linux profiling with performance counters

Purpose of the metric profiler



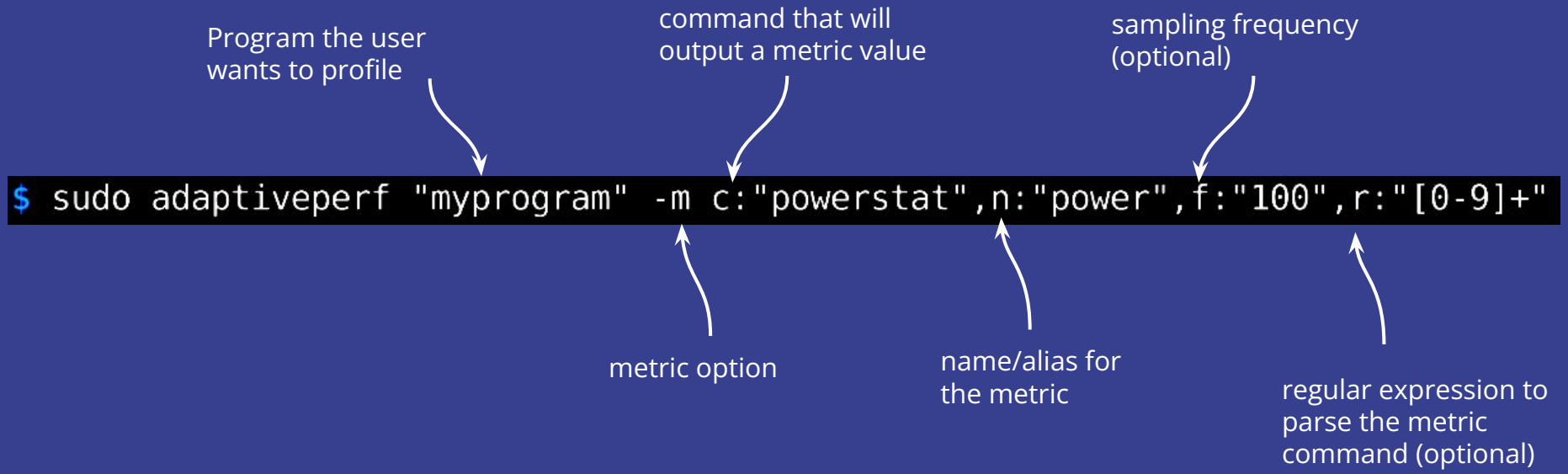
TURBOSTAT

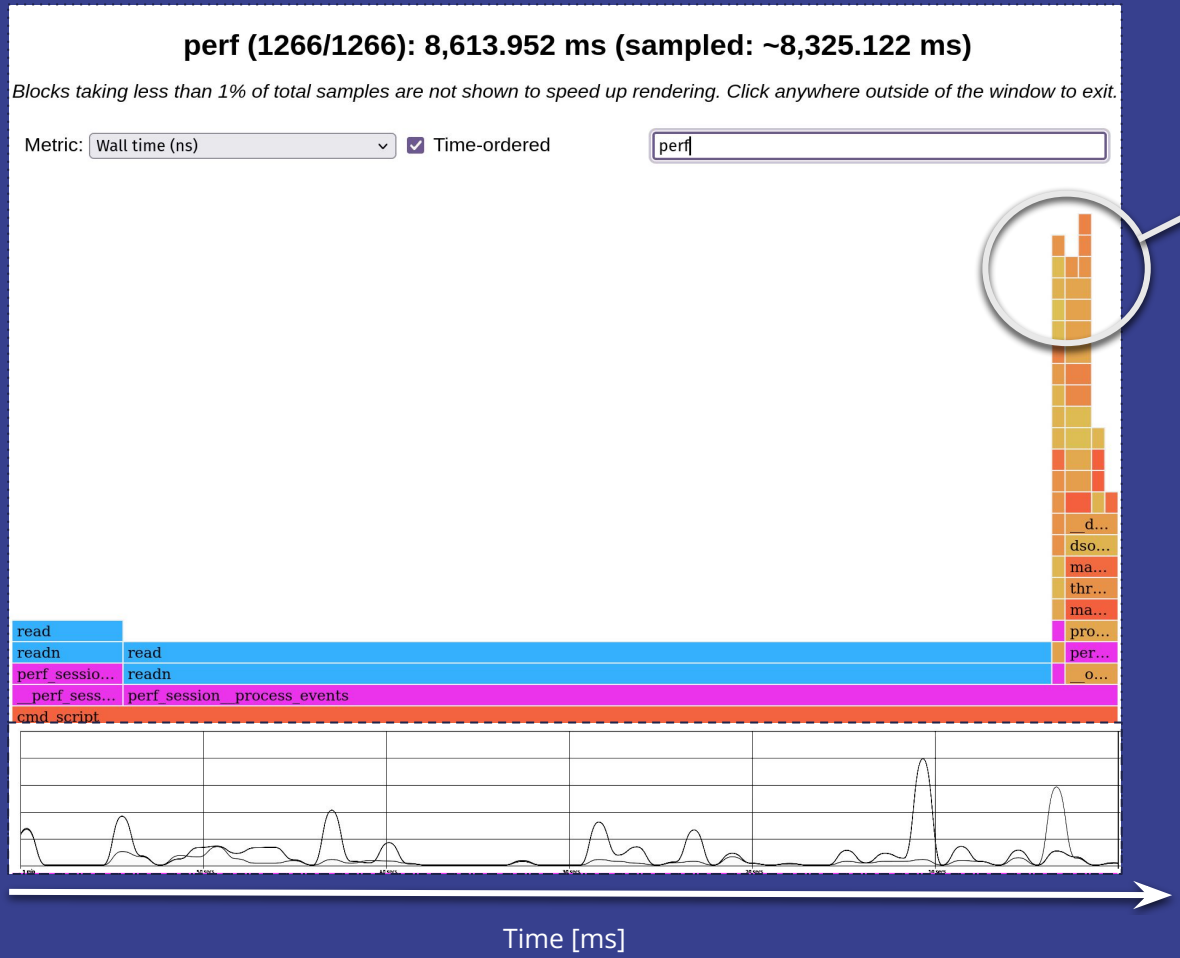
```
# powerstat
```

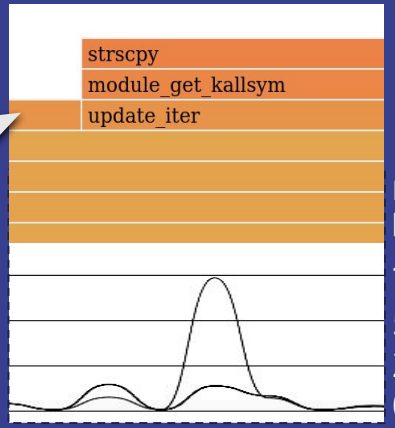
Support for continuous (non-integer) metrics.

Ex: power consumption, CPU temperature

How to use the metric profiler




perf (1266/1266): 8,613.952 ms (sampled: ~8,325.122 ms)
Blocks taking less than 1% of total samples are not shown to speed up rendering. Click anywhere outside of the window to exit.
Metric: Wall time (ns)
Time-ordered
perf
__d...
dso...
ma...
thr...
ma...
pro...
per...
__o...
read
readn
perf_sessio...
__perf_sess...
cmd_script
read
readn
perf_session__process_events
Time [ms]


strscpy
module_get_kallsym
update_iter
Power usage [Watts]
75
50
25
0

Challenges

Challenges	(Possible) Solutions
Reducing profiling overhead	Process as much as you can in parallel
Synchronizing data from different profilers	Add timestamps to each sample
Finding the right tools for measuring power usage / CPU temp / GPU temp	Survey Existing Tools and APIs. Other tools might include lm-sensors, nvidia-smi
Displaying data in an intuitive manner	Try to map metrics to specific instructions

Future work & Conclusions

Enhanced Visualization Options:

- **Heatmaps or dynamic graphs** to provide a more intuitive understanding of performance bottlenecks and signal fluctuations over time.

- **Combine different visualization types (flame graphs, histograms, etc.)** and metrics for more tailored analysis.

Thank you!

Questions?