Measuring Hardware Counters for HPC Application Phase Detection

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Introduction

`Motivation`:

- Reducing the power consumption of parallel applications;
- Fine-granularity to identify the memory-bound regions of parallel application several timestamps;
- Lower overhead of measurement.

`Objective`:

- Measure hardware counters at every given time interval to discover memory-bound regions

Related Works

`Spiliopoulos et al`:

- Tool that analyzes the behavior of sequential application (the concept of phases);
- Based on cache misses of different caches' levels.

`Laurenzano et al`:

- Finer granularity for each application loop.

`Freeh et al.`:

- Define the most suitable frequency for each phase of MPI applications;
- Analyse of the best frequency for each node.

References