Contribution ID: **9** Type: **Short talk**

On Temporal I/O Behavior Characterization: Predicting I/O Phases Using Frequency Techniques

Thursday 23 March 2023 16:00 (10 minutes)

In this paper, we propose an approach based on signal processing to characterize HPC applications' temporal I/O behavior. In the context of each application, our goal is to detect/predict the temporal aspects of its access pattern, i.e. the I/O phases (each composed of one or many individual I/O requests) and their periodicity. Such information can very useful for optimization techniques such as I/O scheduling, burst buffers management, I/O-aware batch scheduling, etc. Our approach uses signal processing techniques, namely Discrete Fourier Transform (DFT) and Discrete Wavelet Transform (DWT) in a signal made of the I/O bandwidth over time (for a small time window). We present our approach and validate it with large-scale experiments, but we also discuss scenarios that were crafted to identify the limitations of such signal processing-based approaches for I/O behavior characterization.

JLESC topic

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Session Classification: Short Talks on Workflows, I/O and Frameworks

Track Classification: I/O, storage and in-situ processing