Contribution ID: **178** Type: **Poster + Flashtalk**

GPU Accelerated Nested Sampling

Nested Sampling is a Monte Carlo method that performs parameter estimation and model comparison robustly for a variety of high dimension and complicated distributions. It has seen widespread usage in the physical sciences, however in recent years increasingly it is viewed as part of a legacy code base, with GPU native paradigms such as neural simulation based inference coming to the fore. In this work we demonstrate that we can effectively reformulate Nested Sampling to a form that is highly amenable to modern GPU hardware, taking unique advantage of vectorization opportunities to accelerate numerical inference to state of the art levels. We provide a public implementation of this code, and in this contribution will explore its application to a number of inference problems such as Gravitational Wave parameter estimation and CMB cosmology.

AI keywords

GPU, MCMC, Bayesian, Sampling, Vectorization

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Track Classification: Inference & Uncertainty