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VegasFlow: accelerating Monte Carlo simulation across platforms with dataflow graphs

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We present VegasFlow, a new software for fast evaluation of high dimensional integrals based on Monte Carlo integration using dataflow graphs.
The growing complexity of calculations and simulations in many areas of science have been accompanied by advances in the computational tools which have helped their developments.
VegasFlow enables developers to delegate all complicated aspects of hardware or platform implementation to the library so they can focus on the problem at hand.
This software is inspired on the Vegas algorithm, ubiquitous in the particle physics community as the driver of cross section integration, and based on Google's powerful TensorFlow library. We benchmark the performance of this library on many different consumer and professional grade GPUs and CPUs, finding up to a 10x improvement with respect to other implementations of the Monte Carlo algorithms considered.

Secondary track (number)

17

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