Comparison of GraphCore IPUs and Nvidia GPUs for cosmology applications

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I will present a first investigation of the suitability and performance of IPUs in deep learning applications in cosmology.

As upcoming photometric galaxy surveys will produce an unprecedented amount of observational data, more and more people turn to deep learning for fast and accurate data processing. In this work I tested typical examples of tasks that will be required to process and prepare for future photometric galaxy surveys.

I will present the benchmark between a Nvidia V100 GPU and a Graphcore IPU on three cosmological use cases: a deterministic deep neural network and a Bayesian neural network (BNN) for galaxy shape estimation, and a generative network for galaxy images production. Results suggests that IPUs perform better than GPUs at training neural networks but, regarding inference, the choice depends on the task to realise.

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