

Performance Evaluation of Artificial Intelligence in Science and Engineering

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Past few years Artificial Intelligence(AI) is widely used for both science and engineering applications. This is being seen as a state-of-the art performance in almost all the fields because of their methodology and enormous data availability, for example in bioinformatics[5] and material science[6]. Machine learning and Deep Learning are the subset of the Artificial Intelligence and these algorithms use some of the well known open source libraries. For example, Tensorflow[3], PyTorch[2] and Keras[1].

We show how the Machine Learning and the Deep Learning are being used the for various science and engineering application using the different parallel computing architecture, especially the GPUs[4] have a tensor cores, which are dedicated for the AI computation. We also address the different applications and their performance based on the problem size with different parallel computer architecture. This will give an overview of the different use cases in Artificial Intelligence in science and engineering along with computing performance evaluation.

References

- [1] Keras. <https://keras.io/>.
- [2] Pytorch. <https://pytorch.org/>.
- [3] Tensor flow. <https://www.tensorflow.org/>.
- [4] Tesla v100. <https://www.nvidia.com/en-gb/data-center/tesla-v100/>.
- [5] Seonwoo Min, Byunghan Lee, and Sungroh Yoon. Deep learning in bioinformatics. *Briefings in bioinformatics*, 18(5):851–869, 2017.
- [6] Tim Mueller, Aaron Gilad Kusne, and Rampi Ramprasad. Machine learning in materials science: Recent progress and emerging applications. *Reviews in Computational Chemistry*, 29:186–273, 2016.