Introduction to Hardware Platform of Machine Learning

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*Abstract*—Machine learning and Artificial Intelligence is quite a hot theme mentioned in sight of modern people. Begin with 2016, many high tech firms like Google, Amazon, Facebook, IBM, Baidu claim they are transforming to “AI Company”. Recently, more and more hardware vendors join the competition, for instance, Qualcomm. As we know DNN (Deep Neural Network) training always be performed in the cloud, which requires high performance GPU to accomplish. And in this case, scientists and engineers begin to find more efficient hardware platform to support their model.

I. INTRODUCTION

We would better have a little knowledge basic on machine learning before we discussing hardware platforms and requirements of it. What is exactly machine learning or artificial intelligence? Machine learning is a form of artificial intelligence that can execute tasks without too much hand-crafted programming or featuring.[1] And it will learn from previous example of you task in the process of training. Then your task in running on new data through inference. Generally, your task should go through feature extraction and classification to generate the result you want. Most AI services today reside in the cloud, where massive amounts of computational power can be harnessed to train the neural network and to handle the large volume of queries (called inference or scoring) in a cloud such as Microsoft, Facebook, Apple, or Google. Beyond the cloud, intelligent machines interact with people and objects through a device at the edge of the network.[2] And some applications need more resource than other, for instance, video compression always consuming mostly computational resource from GPU. That is why we gradually realize the boundary of our AI cloud server and urgently need hardware solutions.

II. APPLICATIONS

With the trend of machine learning and artificial intelligence, hardware applications begin to apply this new technology and many of them have been developed and produced. Personal VR Gaming could be the first one hit our head when we are discussing intelligent hardware. And in other industries, artificial intelligence is widely applied, such as autonomous cars and trucks for transportation

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