Hardware Accelerated Neural Networks

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This proposal is to develop an application specific integrated circuit (ASIC) that accelerates the process of machine learning by means of a neural network.

Background

Machine learning is everywhere these days, and as more and more technology relies on it, the need for more sophisticated models increases. Training neural networks can take a lot of time. This can be accelerated by “throwing hardware at the problem”.

Opportunity

As more corporations begin to use machine learning to solve problems, they need solutions to train their models faster. Designing a custom ASIC that can train Neural networks can speed up the process.

Stumbling Blocks

ASIC design is expensive and takes a long time. You would have to sell a lot of units to make a profit.

Financing

Financing is simple. I could simply sell units at a fixed price or lease units out.

Development Costs

ASIC design has a high upfront cost. It will cost a minimum of .5 million. However, the cost could quickly go up. This is a very rough estimate. The time it takes to design and have a working product is around 2 years.

Likelihood of Success

Machine learning is such an important thing these days. I am sure that if not now, then in the future, people will pay handsomely for specialized hardware.

Relationship to Operating Systems

We are comparing the performance of an ASIC or FPGA to a typical computer that is running a multithreaded application to train a neural network. This is the benchmark that must be beat for this to successful.