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.