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Round table debate

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The problems of neural networks

AI Intelligence

The session topic is very tricky as the neural networks aren't intelligent yet - but is any AI method intelligent?

Let's start to solve the common problems of neural networks and maybe the intelligence will come later …

Knowledge representation

A common definition of intelligence:

Intelligence → ability to do something (advanced) → requires the knowledge about the process

Is the knowledge representation used by the neural networks flexible?

Knowledge representation

The neural networks have defined inputs and outputs.

The human knowledge allows one to interpret it in different ways – *if we know how the car works we can find a broken part if the car does not work*.

For a human being it is also possible to group the sections of knowledge and create a new one.

Attributes

As the neural networks use the numeric attributes is red colour a larger value than green? Is an apple a smaller value than banana?

It is possible to convert binary or nominal attributes into real numbers, but isn't it a process destroying the interpretation of attributes!?!?!?

Scale

„X is as stupid as a bag of hammers/rocks”

A single neuron is as smart as a hammer or rock - why we don’t say that „*X is as stupid as a neural networks or even a brain*”?

Maybe because the network of not-so-brilliant elements has an ability to become something more.

What we need is to extend the number of neurons - but they are the sequentional algorithms.

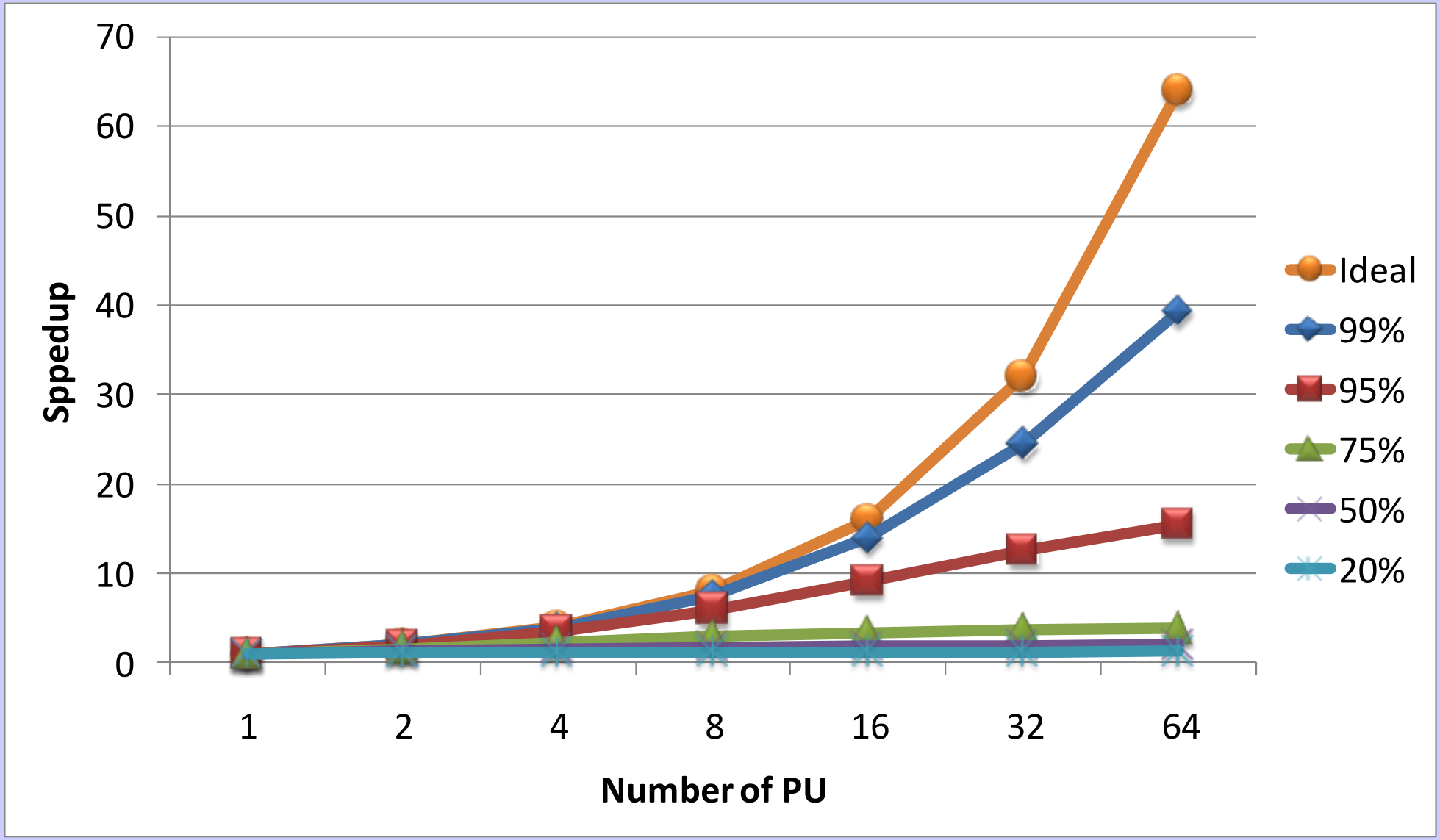
Scale

Let's parallelise the networks (CUDA Neural Library http://code.google.com/p/cnl/ experiment).

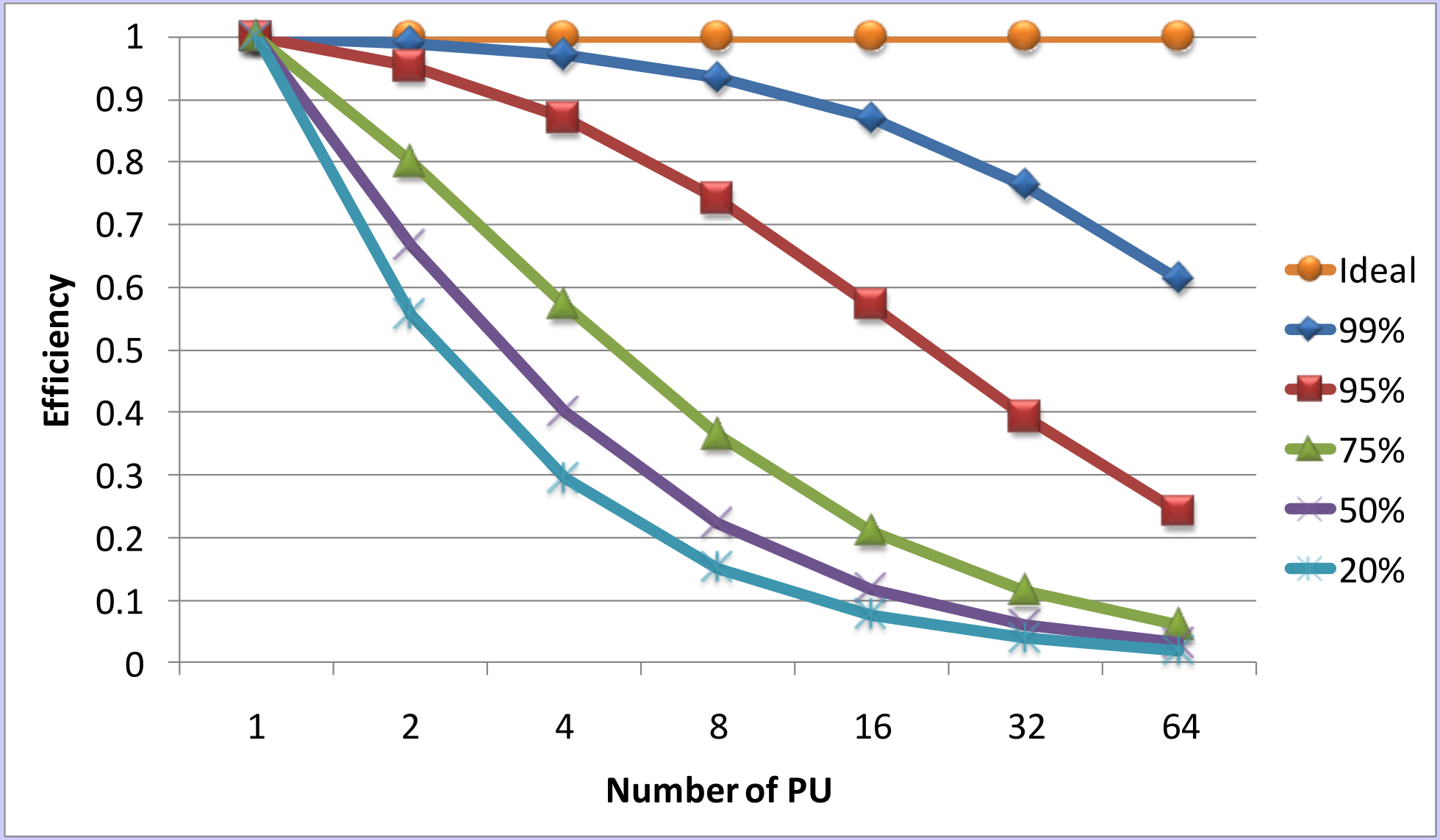
But according to the Ahmdal's low how much speedup could we achieve?

$$Speedup = \frac{1}{(1 - parallel) + \frac{parallel}{processors}}$$

Parallel computing - speedup



Parallel computing - efficiency



But ……

No matter how intelligent/smart you are if the emotions drive your behaviours there is not benefit of the intelligence

Proof: The models predicted the last (or even lasting) financial crisis. What people did? They have invested more money …

Thank you.

Ask, criticise or let's simply start a debate